GOODELL-PRATT

17

Toolsmiths

Established 1888 Incorporated 1895

Goodell-Pratt Company

Toolsmiths

Trade Mark Registered U. S. Patent Office

COMPLETE CATALOG

NUMBER

17

THE LIST PRICES SHOWN IN THIS BOOK ARE SUBJECT TO CHANGE WITHOUT NOTICE

Greenfield, Massachusetts, U. S. A.

Cable Address "PRATTGOOD" Greenfield

DISPLAY ROOMS AND BRANCH OFFICES:

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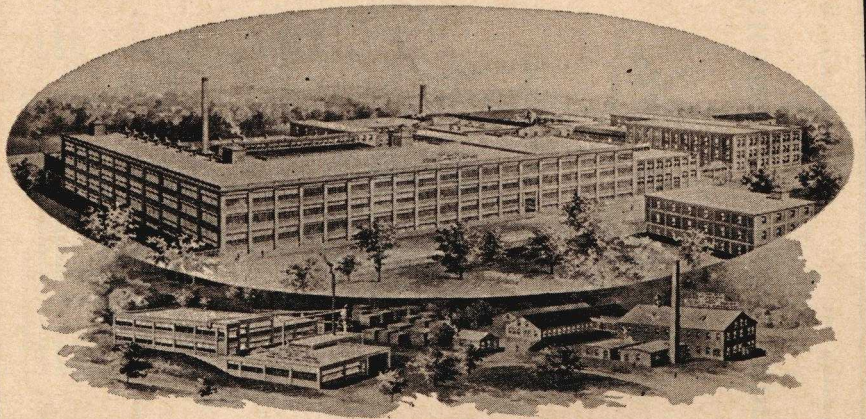

FACTORIES OF THE GOODELL-PRATT COMPANY

The A B C OF TOOL QUALITY

An Alphabetical List of a Few of the

GOODELL-PRATT

1500 GOOD TOOLS

Automatic Drills
Automatic Screw-Drivers
Angular Braces
Aluminum Levels
Automotive Tools
Awls
Arbors

Breast Drills
Brake Lining Cutters
Bit Braces
Bench Drills
Bench Vises
Bevel Protractors
Bench Lathes
Bench Grinders
Butcher Saw Blades
Butcher Saw Frames
Bench Punches and Shears
Bearing Scrapers
Brass Hammers

Corner Braces
Countershafts
Chucks
Carpenters' Tools
Carpenters' Bevels
Calipers
Caliper Rules
Center Gauges
Carpenters' Gauges
Combination Squares and Sets
Cold Chisels
Chain Drills
Circular Saws
Center Punches
Countersinks and Reamers

Drills
Drill Chucks
Drill Points
Drill Attachments
Drive Punches
Dividers

Electric Drills
Electric Tools
Extension Bit Holders

Feeler Gauges
Firm Joint Calipers
Floor Scrapers

Gimlet Bits
Glass Cutters, Turret Head
Glass Cutters, Single Wheel
Grinding Heads

Hand Drills
Hack-Saw Blades
Hack-Saw Frames
Hand Vises
Hollow Augers
Hook Rules

Ice Picks
Indicating Calipers
Iron Levels
Inside Micrometers

Lathes
Levels

Machinists' Tools
Micrometers
Motor Sets and Repair Kits
Mitre Boxes

Nail Sets and Punches

Protractors
Plain Screw Drivers
Plumb Bobs
Punches
Pin Vises
Power Hack-Saw Blades
Precision Model Lathe
Polishing Lathes
Pocket Screw-Drivers
Polishing Heads

Radio Tools
Ratchet Tap Holders
Ratchet Screw-Drivers
Ratchet Braces
Reciprocating Drills
Repair Kits
Rules
Rule Depth Gauges

Saw and Hand Punches
Scroll Chucks
Saw Sets
Steel Rules
Steel Letters and Figures
Solid Beam Squares
Steel Try Squares
Surface Gauges
Speed Indicators
Screw Pitch Gauges
Straight Edges
Spring Calipers and Dividers
Screw-Drivers
Screw-Driver Bits
Swivel Vises

Tool Sets
Tap Holders
Thickness Gauges
Try Squares

Universal Calipers

Valve Grinders
Valve Lifters
Vises

Washer Cutters
Wood Levels

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GENERAL INDEX PAGES NOS. 413 TO 416

Important Information

Catalog No. 17

This edition of our new catalog shows every tool that we manufacture, although pages 9 to 32 inclusive have been omitted.

List Prices

The list prices that are shown in this catalog are those in effect September 20, 1930, and subject to change without notice. For latest list prices apply to your hardware store, automotive or supply dealer.

Manufacture

Every tool shown in this catalog is manufactured in our own plants. We are in every sense of the word manufacturers, starting with the raw materials and processing them through to finished goods. The workmen in our employ are experienced, our equipment is up to date in every respect and our buildings are light and clean.

PAGE 6

Design and Materials

These tools are designed to be as simple and efficient as possible. They are made for men who know and appreciate good tools. The mechanical principles are correct and the materials are selected that give the longest service.

Inspection

Every part put through our factories is inspected at various stages of its manufacture and every completed tool is carefully tested before being packed and placed in its box. Great care is used in packing shipments and each shipment is checked before being sent out. All of our goods are shipped in strong new cases and will arrive in good condition.

Finish

Goodell-Pratt tools are finely and attractively finished, making them pleasanter to work with and easier to keep in good condition. Many of these tools are finished in a pleasing combination of "Goodell-Pratt Red" and black enamel.

This distinctive combination of high gloss vermilion red and black enamel constitutes a trade-mark duly registered in the United States Patent Office under dates of September 11, 1923, and December 16, 1924.

Warranty

Every tool of our manufacture is warranted free from imperfections of material or defects in workmanship and, when so defective, will be cheerfully repaired or replaced without charge; but under no circumstances will we assume the responsibility for breakage where flaws do not appear, nor will we replace tools which have suffered from abusive treatment or have been stamped with the owner's name, changed, or otherwise experimented upon. No dealer is authorized to make replacements for us. Articles claimed defective must be returned, charges paid, for inspection, direct to the factory at Greenfield and not to any of our branch offices.

Parts and Repairs

We can furnish parts for any tool of our manufacture. Customers should state clearly exactly what new parts are wanted. Whenever the owner of the tool is in a position to make the repair himself, or have it made locally, it is recommended, for on many tools the transportation expense to and from the factory, plus the cost of repairs, is oftentimes more than the cost of a new tool.

PAGE 7

Estimates on repairs and prices of repair parts will be gladly furnished on request.

New Tools

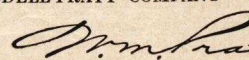
Many new tools have been added to our line. These will be found fully illustrated and described throughout this catalog. Besides these entirely new tools many refinements have been made in others as the result of the constant research work carried on by our engineering staff.

Quality

The rapid growth of this company and the ever-increasing demand for GOODELL-PART TOOLS are due entirely to their quality, of which it is surely proof enough.

There is good old-fashioned honesty in every one of these good tools.

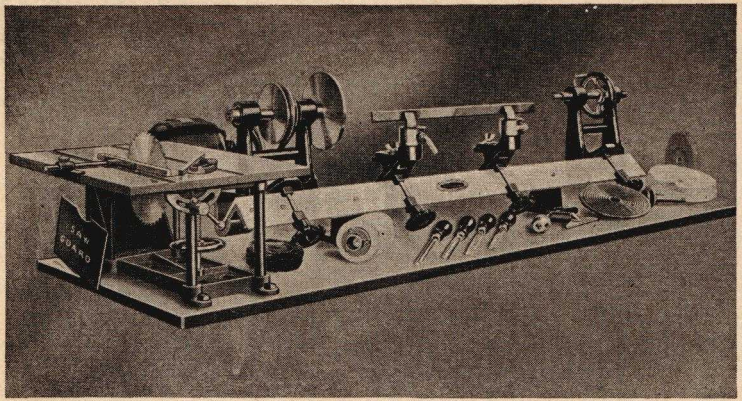
GOODELL-PRATT COMPANY



President.

GREENFIELD, MASSACHUSETTS, U. S. A.
September 20, 1930.

New 1931 Motor Driven Workshop



For Details and Specifications see Pages 213-215 Inclusive

Goodell-Pratt
GREENFIELD, MASSACHUSETTS
UNITED STATES OF AMERICA

Precision Tools

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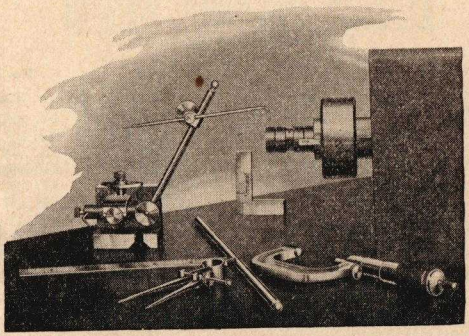

Tempered Steel Rules

Goodell-Pratt Steel Rules are made in a wide variety of styles, including heavy, light, semi-flexible, flexible, and narrow.

The steel used is a fine quality of carefully heat-treated crucible steel. They are ground and polished to a beautiful satin finish, and precisely graduated on dividing engines developed and perfected over a period of forty years by our own engineers. The graduation lines are of different lengths and sharply and uniformly *etched*, making them very easy to read correctly. The figures are deeply etched, of good size, and shaded for legibility.

The standards to which all our rules are made are among the finest in existence, and are checked at intervals with the standards of the United States Bureau of Standards at Washington. Every Goodell-Pratt Rule is as perfect a reproduction of these standards as skilled mechanics and precision machinery can produce, and we guarantee them to be as close to absolute accuracy as it is possible, commercially, to make them.

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In addition to the standard English graduations listed below, we offer rules with Metric and the combination of English and Metric graduations, which are listed on pages 44 to 46.

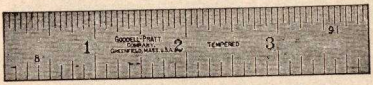
Standard English Graduations

No. 4	No. 7	No. 8	No. 16
8ths	16ths	8ths	32ds
16ths	32ds	32ds	64ths
32ds	64ths	12ths	50ths
64ths	100ths	48ths	100ths

No. 10	No. 11	No. 12	No. 13	No. 14
32ds	64ths	50ths	8ths	8ths
64ths	100ths	100ths	16ths	32ds

Be sure to specify what graduation is desired.

Heavy Tempered Rules



	Length	Approximate Width	Thickness	Price, Each
No. 197	2 inches	$\frac{3}{4}$ inch	$\frac{1}{20}$ inch	$0.40
No. 198	3 inches	$\frac{3}{4}$ inch	$\frac{1}{20}$ inch	.60
No. 199	4 inches	$\frac{3}{4}$ inch	$\frac{1}{20}$ inch	.65
No. 200	6 inches	1 inch	$\frac{1}{16}$ inch	.85
No. 201	9 inches	$1\frac{1}{4}$ inches	$\frac{1}{12}$ inch	1.20
No. 202	12 inches	$1\frac{1}{4}$ inches	$\frac{1}{12}$ inch	1.50
No. 203	18 inches	$1\frac{1}{4}$ inches	$\frac{1}{12}$ inch	2.35
No. 204	24 inches	$1\frac{1}{4}$ inches	$\frac{1}{12}$ inch	2.95
No. 205	36 inches	$1\frac{1}{2}$ inches	$\frac{1}{10}$ inch	5.90

Graduated full length in No. 4, No. 7, or No. 16 graduation.
Packed one half dozen in a carton.

Light Tempered Rules

2 to 12 inch Rules are end graduated

	Length	Approximate Width	Thickness	Price, Each
No. 209	1 inch	$\frac{1}{2}$ inch	$\frac{1}{20}$ inch	$0.30
No. 210	2 inches	$\frac{1}{2}$ inch	$\frac{1}{20}$ inch	.40
No. 211	3 inches	$\frac{5}{8}$ inch	$\frac{1}{20}$ inch	.60
No. 212	4 inches	$\frac{5}{8}$ inch	$\frac{1}{20}$ inch	.65
No. 213	6 inches	$\frac{3}{4}$ inch	$\frac{1}{20}$ inch	.85
No. 214	9 inches	1 inch	$\frac{1}{16}$ inch	1.20
No. 215	12 inches	1 inch	$\frac{1}{16}$ inch	1.50
No. 216	18 inches	1 inch	$\frac{1}{16}$ inch	2.35
No. 217	24 inches	1 inch	$\frac{1}{16}$ inch	2.95
No. 218	36 inches	1 inch	$\frac{1}{16}$ inch	5.90

Graduated full length in No. 4, No. 7, or No. 16 graduation.
Packed one half dozen in a carton.

Semi-Flexible Tempered Rules

2 to 12 inch Rules are end graduated

	Length	Approximate Width	Thickness	Price, Each
No. 249	1 inch	$\frac{1}{2}$ inch	$\frac{1}{50}$ inch	$0.30
No. 250	2 inches	$\frac{1}{2}$ inch	$\frac{1}{50}$ inch	.40
No. 251	3 inches	$\frac{5}{8}$ inch	$\frac{1}{50}$ inch	.60
No. 252	4 inches	$\frac{5}{8}$ inch	$\frac{1}{50}$ inch	.65
No. 253	6 inches	$\frac{5}{8}$ inch	$\frac{1}{50}$ inch	.85
No. 254	9 inches	$\frac{3}{4}$ inch	$\frac{1}{50}$ inch	1.20
No. 255	12 inches	$\frac{3}{4}$ inch	$\frac{1}{50}$ inch	1.50
No. 256	18 inches	$\frac{3}{4}$ inch	$\frac{1}{50}$ inch	2.35
No. 257	24 inches	$\frac{7}{8}$ inch	$\frac{1}{40}$ inch	2.95
No. 258	36 inches	$\frac{7}{8}$ inch	$\frac{1}{40}$ inch	5.90

Graduated full length in No. 4 or No. 7 graduation.
Packed one half dozen in a carton.

Flexible Tempered Rules

Graduated on one side only

	Length	Approximate Width	Thickness	Price, Each
No. 260	1 inch	$\frac{5}{16}$ inch	$\frac{1}{100}$ inch	$0.30
No. 261	2 inches	$\frac{5}{16}$ inch	$\frac{1}{100}$ inch	.40
No. 262	3 inches	$\frac{5}{16}$ inch	$\frac{1}{100}$ inch	.60
No. 263	4 inches	$\frac{5}{16}$ inch	$\frac{1}{100}$ inch	.65
No. 264	6 inches	$\frac{5}{16}$ inch	$\frac{1}{100}$ inch	.85
No. 265	9 inches	$\frac{5}{16}$ inch	$\frac{1}{100}$ inch	1.20
No. 266	12 inches	$\frac{5}{16}$ inch	$\frac{1}{100}$ inch	1.50
No. 267	18 inches	$\frac{5}{16}$ inch	$\frac{1}{100}$ inch	2.35
No. 268	24 inches	$\frac{5}{16}$ inch	$\frac{1}{100}$ inch	2.95
No. 269	36 inches	$\frac{5}{16}$ inch	$\frac{1}{100}$ inch	5.90

Graduated full length in No. 10, No. 11, or No. 12 graduation.
Packed one half dozen in a carton.

Light Tempered Rules

Numbered for Quick Reading

This 6-inch rule is the same as our No. 213 on page 35. For fast reading the 64th graduations are numbered at each 8th graduation line.

The four edges are graduated in 8ths, 16ths, 32ds, and 64ths. No end graduations.

	Length	Approximate Width	Thickness	Price, Each
No. 866	6 inches	$\frac{3}{4}$ inch	$\frac{1}{20}$ inch	$0 85

Packed one half dozen in a carton.

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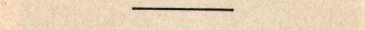
Narrow Tempered Rules



Made of the finest quality of tempered crucible steel, nicely polished and with plain, sharply etched graduations and large clear figures.

Accurately graduated on one edge of each side.

	Length	Approximate Width	Thickness	Price, Each
No. 270	1 inch	$\frac{1}{4}$ inch	$\frac{1}{20}$ inch	$0.35
No. 271	2 inches	$\frac{1}{4}$ inch	$\frac{1}{20}$ inch	.40
No. 272	3 inches	$\frac{1}{4}$ inch	$\frac{1}{20}$ inch	.60
No. 273	4 inches	$\frac{1}{4}$ inch	$\frac{1}{20}$ inch	.65
No. 274	6 inches	$\frac{1}{4}$ inch	$\frac{1}{20}$ inch	.85
No. 275	9 inches	$\frac{1}{4}$ inch	$\frac{1}{20}$ inch	1.20
No. 276	12 inches	$\frac{1}{4}$ inch	$\frac{1}{20}$ inch	1.50

Graduated full length in No. 10, No. 11, or No. 12 graduation.

Packed one half dozen in a carton.

Standard Tempered Rules

A very handy rule provided with a hole in one end for hanging it up when not in use. It is made of tempered crucible steel nicely polished and graduated on one side in 8th and 32d inches. Plain deeply etched graduations and large clear figures.

	Length	Approximate Width	Thickness	Price, Each
No. 763	6 inches	$\frac{3}{4}$ inch	$\frac{1}{20}$ inch	$0.35
No. 765	12 inches	$\frac{3}{4}$ inch	$\frac{1}{20}$ inch	.50

Packed one half dozen in a carton.

No. 763 Steel Rule Counter Display

PAGE 38

A very attractive counter card carrying twelve No. 763 6-inch steel rules, illustrated and described above. The very modest price at which the rule can be sold makes it a particularly brisk seller from a display of this character.

The card, which is of heavy stock, is printed in red and black, giving a three-color effect. Measures $10\frac{3}{8}$ x $13\frac{1}{4}$ inches and is fitted with a substantial easel.

Price, with twelve rules attached.....(ZAZOT) $4.40

Weight, $1\frac{1}{4}$ pounds.

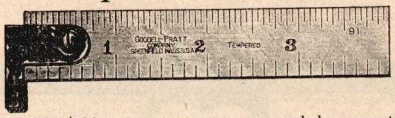
No. 765 Steel Rule Counter Display

Same as above, but carrying twelve No. 765 12-inch steel rules. Measures $13\frac{1}{4}$ x $16\frac{1}{2}$ inches.

Price, with twelve rules attached.....(ZAZSO) $6.30

Weight, $2\frac{1}{4}$ pounds.

Tempered Hook Rules



Designed for taking measurements over rounded corners, through hubs of wheels or pulleys, or for setting dividers or inside calipers and many similar uses.

The hardened steel hook is locked on to the rule by a hardened eccentric bolt and is easily detachable when not wanted.

	Length	Width	Thickness		Price, Each
No. 70	4 inches	$\frac{3}{16}$ inch	$\frac{3}{20}$ inch	(YAMDA)	$1.00
No. 71	6 inches	$\frac{3}{16}$ inch	$\frac{3}{20}$ inch	(YAMYK)	1.25
No. 72	9 inches	1 inch	$\frac{1}{16}$ inch	(YANEG)	1.75
No. 73	12 inches	1 inch	$\frac{1}{16}$ inch	(YANJO)	2.15

Graduated in No. 4, No. 7, or Metric graduation.
Each rule is packed in a carton.

Tempered Hook Rule

Numbered for Quick Reading

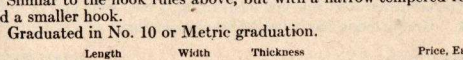
PAGE 39

Same as No. 71 above, but with the 64th graduations numbered at each 8th graduation line.

	Length	Width	Thickness		Price, Each
No. 966	6 inches	$\frac{3}{4}$ inch	$\frac{3}{20}$ inch	(ZIJJO)	$1.25

Graduated in No. 4 graduation.
Packed one rule in a carton.

Narrow Hook Rules

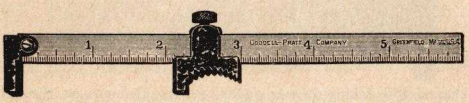


Similar to the hook rules above, but with a narrow tempered rule and a smaller hook.

Graduated in No. 10 or Metric graduation.

	Length	Width	Thickness		Price, Each
No. 770	4 inches	$\frac{3}{16}$ inch	$\frac{1}{20}$ inch	(ZEALC)	$1.00
No. 771	6 inches	$\frac{3}{16}$ inch	$\frac{1}{20}$ inch	(ZEAMD)	1.25

Slide Caliper Rule
No. 1771



This useful tool can be used for three distinct purposes. It is primarily intended for use as a caliper rule, for which purpose it will be found extremely convenient as measurements are read directly from the end of the slide without the necessity of making any allowances.

By removing the hook the tool becomes a stop rule or by removing the slide it becomes a narrow hook rule.

The tempered steel rule is 6 inches long, $\frac{3}{8}$ inch wide and $\frac{1}{10}$ inch thick. Graduated in No. 10 or Metric graduation.

Price, each..... (ZOCKY) $2.30

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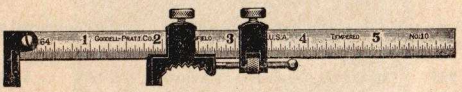
Packed one in a carton, $6\frac{3}{8}$ x $1\frac{1}{4}$ x $\frac{1}{2}$ inch. Weight, $1\frac{1}{2}$ ounces.

Slide Caliper Rule
No. 871



This is the same as our No. 1771 described above, with the addition of a means for fine adjustment of the slide. When the fine adjustment feature is used the locking slide is locked with the set screw and final movement of the thumb slide made by turning the knurled adjusting nut.

By removing the hook the tool becomes a stop rule with fine adjustment or by removing the slides it becomes a narrow hook rule.

The tempered steel rule is 6 inches long, $\frac{3}{8}$ inch wide and $\frac{1}{10}$ inch thick. Graduated in No. 10 or Metric graduation.

Price, each.... (ZERKE) $3.15

Packed one in a carton, $6\frac{3}{8}$ x $1\frac{1}{4}$ x $\frac{1}{2}$ inch. Weight, 2 ounces.

Tempered Stop Rule
No. 971

This consists of a narrow tempered steel rule provided with a thumb slide for measuring against a projection. A thumb screw is provided to hold the slide in any desired position. The rule is 6 inches long, $\frac{3}{8}$ inch wide and $\frac{1}{70}$ inch thick. Graduated in No. 10 or Metric graduation.

Price, each..... (ZIKAG) $1.90

Packed one in a carton, $6\frac{3}{8}$ x $1\frac{1}{4}$ x $\frac{1}{2}$ inch. Weight, 1 ounce.

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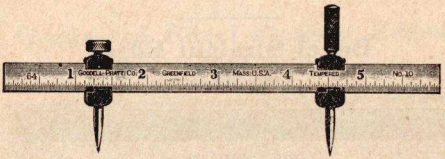
Tempered Trammel Rule
No. 657



A very compact and useful trammel for all measurements within the capacity of the steel rule which forms the beam. The rule is 6 inches long, $\frac{3}{8}$ inch wide, and $\frac{1}{70}$ inch thick. The hardened points can be set very accurately, direct from the graduations on the steel rule. The thumb nuts that lock the points are designed to make it easy to describe circles. For this purpose the point at the left with the flat top is made the center and the point at the right the scriber.

Graduated in either No. 10 or Metric graduation.

Price, each..... (ZAFER) $2.30

Packed one in a carton, $6\frac{3}{8}$ x $2\frac{1}{4}$ x $\frac{1}{2}$ inch. Weight, $1\frac{1}{2}$ ounces.

Straight Edges

Tempered Steel

These straight edges are made from the best quality of crucible steel accurately ground with parallel edges, tempered, and nicely polished. Not graduated.

	Length	Approximate Width	Thickness	Price, Each
No. 300	6 inches	1 inch	$\frac{3}{16}$ inch	$1.25
No. 301	9 inches	1 inch	$\frac{3}{16}$ inch	1.40
No. 302	12 inches	$1\frac{1}{2}$ inches	$\frac{3}{16}$ inch	1.50
No. 303	18 inches	$1\frac{1}{2}$ inches	$\frac{3}{16}$ inch	2.50
No. 304	24 inches	$1\frac{1}{2}$ inches	$\frac{3}{16}$ inch	3.35
No. 305	36 inches	2 inches	$\frac{1}{4}$ inch	6.00
No. 848	48 inches	3 inches	$\frac{1}{4}$ inch	10.00
No. 860	60 inches	3 inches	$\frac{1}{4}$ inch	15.00
No. 872	72 inches	3 inches	$\frac{1}{4}$ inch	20.00

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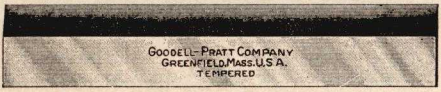
Packed one in a carton.

Bevel Straight Edges

Tempered Steel



These straight edges are made from the best quality of crucible steel accurately ground, tempered, and nicely polished. One edge only is beveled. Beveled edge is $\frac{1}{16}$ inch thick. Not graduated.

	Length	Approximate Width	Thickness	Price, Each
No. 320	12 inches	$1\frac{1}{2}$ inches	$\frac{3}{16}$ inch	$2.00
No. 321	18 inches	$1\frac{1}{2}$ inches	$\frac{3}{16}$ inch	3.25
No. 322	24 inches	$1\frac{1}{2}$ inches	$\frac{3}{16}$ inch	4.50
No. 323	36 inches	2 inches	$\frac{1}{4}$ inch	7.10

Packed one in a carton.

Graduated Straight Edges

Tempered Steel

These straight edges are made from the best quality of crucible steel, accurately ground with parallel edges, tempered, and nicely polished. They are graduated on one side only in 8ths and 16ths of an inch.

	Length	Approximate Width	Thickness	Price, Each
No. 702	12 inches	1½ inches	3/16 inch	$2.50
No. 703	18 inches	1½ inches	3/16 inch	3.75
No. 704	24 inches	1½ inches	3/16 inch	5.00
No. 705	36 inches	2 inches	¼ inch	7.50

Packed one in a carton.

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Graduated Bevel Straight Edges

Tempered Steel

These straight edges are made from the best quality of crucible steel accurately ground, tempered, and nicely polished. One edge only is beveled. Beveled edge is 1/16 inch thick. Graduated on beveled edge only in 32ds of an inch.

	Length	Approximate Width	Thickness	Price, Each
No. 802	12 inches	1½ inches	3/16 inch	$3.00
No. 803	18 inches	1½ inches	3/16 inch	4.60
No. 804	24 inches	1½ inches	3/16 inch	6.25
No. 805	36 inches	2 inches	¼ inch	8.75

Packed one in a carton.

Standard Tempered Metric Rules

Accurately graduated on four edges in millimeters and ½ millimeters.

The 5, 10, 15, 20, 30 and 50 centimeter and 1 meter lengths can be furnished graduated in metric and English as follows: millimeters and 1/64 inches on one side and ½ millimeters and 1/32 inches on the other.

	Length	Approximate Width	Thickness	Price, Each
No. 222	5 cm.	¾ inch	1/20 inch	$0.40
No. 223	10 cm.	¾ inch	1/20 inch	.65
No. 224	15 cm.	¾ inch	1/20 inch	.75
No. 225	20 cm.	¾ inch	1/20 inch	1.10
No. 226	25 cm.	1 inch	1/16 inch	1.25
No. 227	30 cm.	1 inch	1/16 inch	1.60
No. 228	40 cm.	1 inch	1/16 inch	2.10
No. 229	50 cm.	1 inch	1/16 inch	2.50
No. 230	60 cm.	1¼ inches	1/12 inch	3.35
No. 231	80 cm.	1¼ inches	1/12 inch	6.70
No. 232	1 m.	1¼ inches	1/12 inch	9.20

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Packed one half dozen in a carton.

Semi-Flexible Metric Rules

Accurately graduated on four edges in millimeters and ½ millimeters.

	Length	Approximate Width	Thickness	Price, Each
No. 289	5 cm.	¾ inch	1/30 inch	$0.40
No. 290	10 cm.	¾ inch	1/30 inch	.65
No. 291	15 cm.	¾ inch	1/30 inch	.75
No. 292	20 cm.	¾ inch	1/30 inch	1.10
No. 293	25 cm.	¾ inch	1/30 inch	1.25
No. 294	30 cm.	¾ inch	1/30 inch	1.60
No. 295	40 cm.	¾ inch	1/30 inch	2.10
No. 296	50 cm.	¾ inch	1/30 inch	2.50
No. 297	60 cm.	¾ inch	1/40 inch	3.35
No. 298	80 cm.	¾ inch	1/40 inch	6.70
No. 299	1 m.	¾ inch	1/40 inch	9.20

Packed one half dozen in a carton.

Flexible Metric Rules

Accurately graduated on two edges on one side only in millimeters and $\frac{1}{2}$ millimeters.

The 10, 15, 20, 30, and 50 centimeter lengths can be furnished with metric and English graduations on one side as follows: millimeters on one edge and $\frac{1}{64}$ inches on the other.

	Length	Approximate Width	Thickness	Price, Each
No. 233	5 cm.	$\frac{5}{8}$ inch	$\frac{1}{100}$ inch	$0.40
No. 234	10 cm.	$\frac{5}{8}$ inch	$\frac{1}{100}$ inch	.65
No. 235	15 cm.	$\frac{5}{8}$ inch	$\frac{1}{100}$ inch	.75
No. 236	20 cm.	$\frac{5}{8}$ inch	$\frac{1}{100}$ inch	1.10
No. 237	25 cm.	$\frac{5}{8}$ inch	$\frac{1}{100}$ inch	1.25
No. 238	30 cm.	$\frac{5}{8}$ inch	$\frac{1}{100}$ inch	1.60
No. 239	40 cm.	$\frac{5}{8}$ inch	$\frac{1}{100}$ inch	2.10
No. 240	50 cm.	$\frac{5}{8}$ inch	$\frac{1}{100}$ inch	2.50
No. 241	60 cm.	$\frac{5}{8}$ inch	$\frac{1}{100}$ inch	3.35
No. 242	80 cm.	$\frac{5}{8}$ inch	$\frac{1}{100}$ inch	6.70
No. 243	1 m.	$\frac{5}{8}$ inch	$\frac{1}{100}$ inch	9.20

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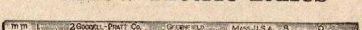
Packed one half dozen in a carton.

Narrow Metric Rules



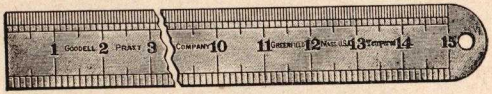
Accurately graduated in millimeters and $\frac{1}{2}$ millimeters.

The 10 and 15 centimeter lengths can be furnished with metric and English graduation as follows: Millimeters on one side and $\frac{1}{64}$ inches on the other side.

	Length	Approximate Width	Thickness	Price, Each
No. 280	10 cm.	$\frac{1}{4}$ inch	$\frac{1}{20}$ inch	$0.65
No. 281	15 cm.	$\frac{1}{4}$ inch	$\frac{1}{20}$ inch	.85
No. 282	20 cm.	$\frac{1}{4}$ inch	$\frac{1}{20}$ inch	1.10
No. 283	30 cm.	$\frac{1}{4}$ inch	$\frac{1}{20}$ inch	1.50

Packed one half dozen in a carton.

Standard Metric Rules



These rules are accurately graduated in millimeters and ½ millimeters, with a line across the end of the graduation marks for convenience in quick reading.

One end of the rule is rounded and provided with a hole in order that it may be hung up when not in use.

They are made from the finest quality of light tempered rule steel, nicely finished, with plain, clear graduations, and heavy shaded figures.

These rules are graduated on one side only.

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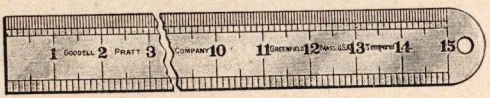
	Length	Approximate Width	Thickness	Price, Each
No. 653	15 cm.	19 mm.	1.3 mm.	$0.50
No. 654	20 cm.	19 mm.	1.3 mm.	.75

Packed one half dozen in a carton.

Semi-Flexible Metric Rules



These steel rules are similar in every way to the Nos. 653 and 654 illustrated and described above. They are made of lighter material, as noted below, making them semi-flexible.

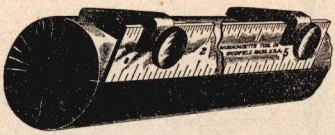
They are graduated on one side only in millimeters and ½ millimeters.

	Length	Approximate Width	Thickness	Price, Each
No. 693	15 cm.	16 mm.	.5 mm.	$0.50
No. 694	20 cm.	16 mm.	.5 mm.	.75

Packed one half dozen in a carton.

Keyseating Rule Blocks

No. 77



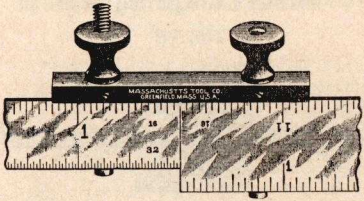
These blocks convert any steel rule or straight edge of regular thickness into a keyseat or parallel rule, making it unnecessary to cumber the kit with an extra appliance to scribe parallel lines on round stock. They are made of hardened steel, with ground faces, making them light and accurate.

Price, per pair ..... (YAOWR) $0.85

Packed one pair in a carton, $2\frac{1}{8}$ x $1\frac{1}{4}$ x $\frac{5}{8}$ inch. Weight, 2 ounces.

Steel Rule Clamps

No. 76



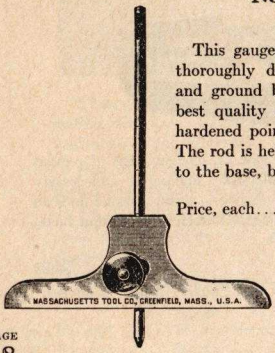
These clamps are a convenient and useful addition to any machinist's kit. They will clamp two steel rules of the same or different widths and hold them firmly end to end, enabling the user to make two short rules into one of longer length. The clamps are made of case-hardened steel, and will hold rules from $\frac{5}{8}$ to $1\frac{1}{4}$ inches wide.

Price, each ..... (YAORM) $0.85

Packed one in a carton, 3 x $2\frac{1}{2}$ x 1 inch. Weight, $2\frac{1}{2}$ ounces.

Depth Gauge

No. 64

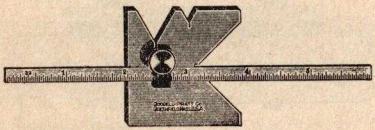


This gauge is carefully constructed, and is a thoroughly dependable little tool. The milled and ground base is 3 inches long. The rod is best quality cast steel, $4\frac{1}{4}$ inches long, with a hardened point. It is graduated in half inches. The rod is held accurately in place perpendicular to the base, but can be turned parallel if desired.

Price, each.....(YAJDO) $1.25

Steel Center Square

No. 78



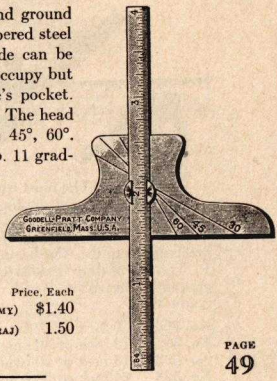
This all-steel tool combines the most, in the smallest compass and lightest weight, that has ever been offered to tool maker or machinist. It is a center square, T-square, depth gauge, center gauge, and steel rule. The narrow tempered steel rule furnished with the tool is 6 inches in length.

Price, each.....(YAPAG) $3.35

Furnished in No. 10, No. 11, or Metric graduation, as specified.

Rule Depth Gauges

These depth gauges have a milled and ground base 3 inches long and a narrow tempered steel rule either 4 or 6 inches long. The blade can be turned parallel to the base so as to occupy but little room in the tool chest or in one's pocket. The tool also makes a useful T-square. The head is graduated with lines indicating 30°, 45°, 60°. Rule graduated in either No. 10 or No. 11 graduation.



		Price, Each
No. 79.	4 inch.....(YAPKO)	$1.40
No. 80.	6 inch.....(YAPUL)	1.50

Metric

		Price, Each
No. 79M.	10 cm.....(YAPMY)	$1.40
No. 80M.	15 cm.....(YARAJ)	1.50

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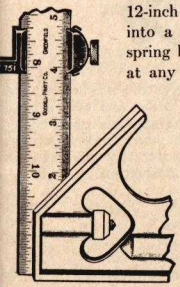
Height Gauge Attachment

No. 751



This little tool slipped on the blade of any of our 12-inch combination squares or sets transforms it into a very dependable height gauge. A friction spring beneath the set screw holds the attachment at any given position while the set screw is being tightened. The bottom is accurately ground at right angles to the scale so that it can be set directly to the graduation lines on the square blade, and measurements can be transferred within very close limits.

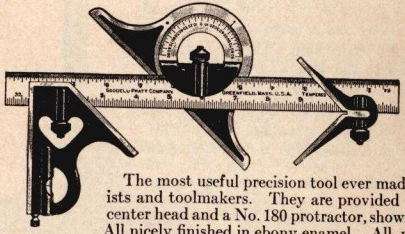
It is made of steel carefully hardened, and has a mottled finish.

Price, each.....(ZAYBS) $1.10

Packed one in a carton, $2\frac{7}{8}$ x 1 x $\frac{1}{2}$ inch. Weight, 2 ounces.

Combination Sets

Tempered Steel Blades



The most useful precision tool ever made for machinists and toolmakers. They are provided with a beam, center head and a No. 180 protractor, shown on page 54. All nicely finished in ebony enamel. All working faces precisely ground. The beam is equipped with small level and scriber.

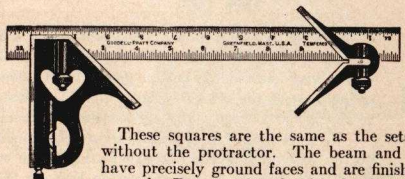
The accurately graduated, tempered crucible steel blades are graduated in either No. 4, No. 7, Metric or Metric and English graduation.

	Length	Weight		Price, Each
No. 390	9 inch or 20 cm. blade	$1\frac{3}{8}$ pounds	(YOERZ)	$6.00
PAGE 50 No. 391	12 inch or 30 cm. blade	$1\frac{5}{8}$ pounds	(YOEVD)	6.50
No. 392	18 inch or 50 cm. blade	$1\frac{7}{8}$ pounds	(YOEWF)	7.50
No. 393	24 inch or 60 cm. blade	$1\frac{3}{4}$ pounds	(YOFAL)	8.35

Packed one in a carton.

Combination Squares

Tempered Steel Blades



These squares are the same as the sets above, but without the protractor. The beam and center head have precisely ground faces and are finished in ebony enamel. Beam equipped with level and a scriber.

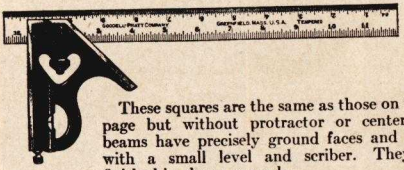
The tempered crucible steel blades are accurately graduated in No. 4, No. 7, Metric or Metric and English graduation.

	Length	Weight		Price, Each
No. 361	6 inch blade	$\frac{5}{8}$ pound	(YIZYH)	$2.40
No. 362	9 inch or 20 cm. blade	$\frac{3}{4}$ pound	(YOAGM)	3.00
No. 363	12 inch or 30 cm. blade	$\frac{7}{8}$ pound	(YOAHN)	3.60
No. 364	18 inch or 50 cm. blade	1 pound	(YOAJP)	4.50
No. 365	24 inch or 60 cm. blade	$1\frac{1}{8}$ pounds	(YOAMS)	5.35

Packed one in a carton.

Combination Squares

Tempered Steel Blades



These squares are the same as those on the preceding page but without protractor or center head. The beams have precisely ground faces and are equipped with a small level and scriber. They are nicely finished in ebony enamel.

The tempered crucible steel blades are accurately graduated in No. 4, No. 7, Metric or Metric and English graduation.

	Length	Weight		Price, Each
No. 371	6 inch blade	½ pound	(YOBJE)	$1.80
No. 372	9 inch or 20 cm. blade	5/8 pound	(YOBLO)	2.40
No. 373	12 inch or 30 cm. blade	¾ pound	(YOBOL)	2.90
No. 374	18 inch or 50 cm. blade	⅞ pound	(YOBUM)	3.90
No. 375	24 inch or 60 cm. blade	1 pound	(YOBYN)	4.80

Packed one in a carton.

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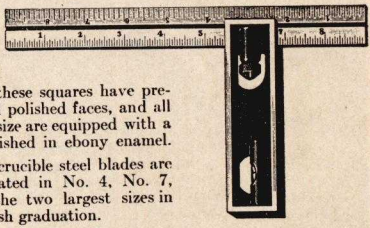
Sliding Blade Squares

Tempered Steel Blades

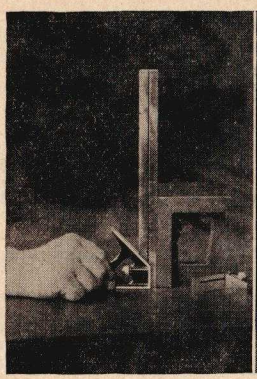


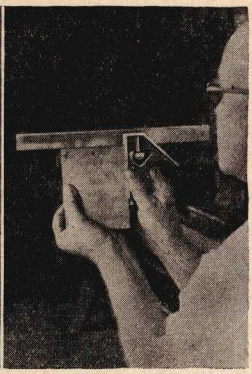
The beams of these squares have precisely ground and polished faces, and all but the smallest size are equipped with a level. Nicely finished in ebony enamel.

The tempered crucible steel blades are accurately graduated in No. 4, No. 7, or Metric, and the two largest sizes in Metric and English graduation.

	Blade	Beam	Weight		Price, Each
No. 150	4 inches	2⅜ inches	¼ pound	(YEEWT)	$1.50
No. 151	6 inches	3⅜ inches	½ pound	(YEFAB)	2.40
No. 152	9 inches or 20 cm.	4⅜ inches	5/8 pound	(YEFBA)	3.60
No. 153	12 inches or 30 cm.	5¾ inches	1 pound	(YEFCE)	4.60

Packed one in a carton.





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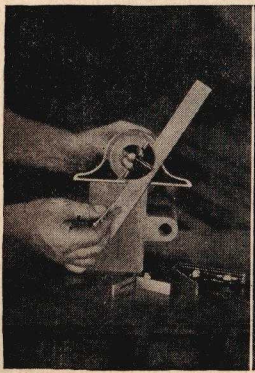
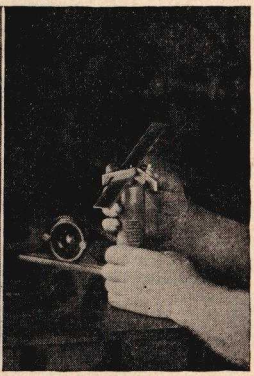
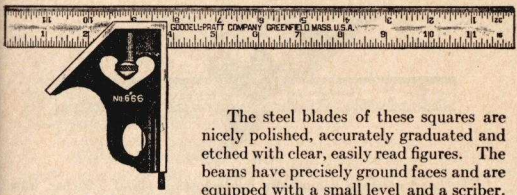
Combination Sets and Squares are the machinists' most versatile tools. Their usefulness is almost unlimited





The Protractor and Center Heads of Combination Sets are constantly needed in laying out even the simplest jobs

Combination Squares
No. 666



The steel blades of these squares are nicely polished, accurately graduated and etched with clear, easily read figures. The beams have precisely ground faces and are equipped with a small level and a scriber. The web of the beam is finished in glossy black enamel.

Blades are graduated in 8ths, 32ds, 12ths and 48ths of an inch.

Length of Blade	Weight		Price, Each
9 inches	10 ounces	(ZAGSE)	$2.10
12 inches	12 ounces	(ZAGVO)	2.50

Packed one in a carton.

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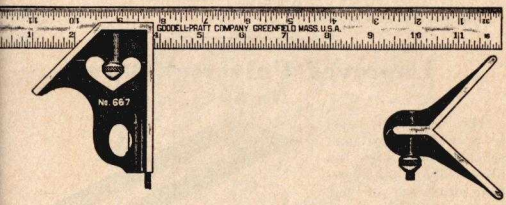
Combination Squares
No. 667



These squares are similar to those described above, with the addition of a center head with accurately ground faces. The beam is equipped with a level and scriber.

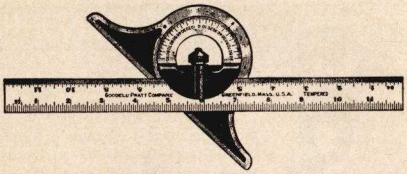
The blades are graduated in 8ths, 16ths, 32ds, and 64ths, but can be furnished with the same graduation as No. 666 above if desired.

Length of Blade	Weight		Price, Each
9 inches	13 ounces	(ZAHET)	$2.75
12 inches	15 ounces	(ZAHIV)	3.20

Packed one in a carton.

Bevel Protractors

Tempered Steel Blades



The head of these beautifully made tools is about 7 inches long. The face is precisely ground and polished. The turret carries the blade and a small, accurately set level. It is accurately graduated 90 degrees either side of 0 and every care is taken to have it at right angles to the face of the head.

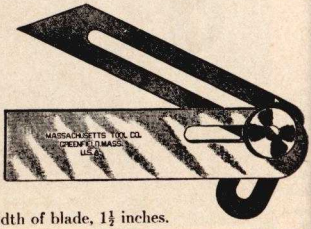
The blade is made of tempered crucible steel accurately graduated in No. 4, No. 7, Metric or Metric and English graduation.

		Length	Weight		Price, Each
PAGE 54	No. 180	Protractor head only	$\frac{5}{8}$ pound	(YEJEG)	$3.00
	No. 181	9 inch or 20 cm. complete	$\frac{3}{4}$ pound	(YEJJO)	4.50
	No. 182	12 inch or 30 cm. complete	$\frac{7}{8}$ pound	(YEJUK)	5.10
	No. 183	18 inch or 50 cm. complete	1 pound	(YEKGA)	6.00
	No. 184	24 inch or 60 cm. complete	$1\frac{1}{8}$ pounds	(YEKHE)	6.90

Packed one in a carton.

Improved Universal Bevel

No. 59



This universal bevel is a well-finished and reliable tool with an off-set blade that allows the measuring of any angle. One side is perfectly flat and one edge is solid; making it convenient to use in taking angles from blue prints, or in working thin templets.

Length, 3 inches. Width of blade, $1\frac{1}{2}$ inches.

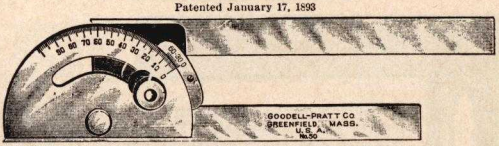
Price, each..... (YAHYA) $2.00

Packed one in a carton.

No. 50 Draftsman's Protractor

Stainless Steel

Patented January 17, 1893



This protractor is made of stainless steel with blades 9 inches long. The arc is 4 inches in diameter, graduated in degrees, with a vernier reading to five minutes. It has a binding screw on one side that securely holds the blades at any angle and enables it to be picked up and moved about readily. The blades are fastened into the arc in such a manner as to make all parts come flush on the under side, thus making a perfectly flat surface for resting on the table. Either blade can be used in contact with a T-square, giving any angle and its complement from 0 to 90 degrees. It forms a perfect adjustable triangle. Finely polished.

	Weight		Price, Each
Price, in carton	$\frac{1}{2}$ pound	(YAFIX)	$9.20
Price, in polished mahogany case	$\frac{7}{8}$ pound	(YAFOZ)	10.50

Blades of extra length furnished to order.

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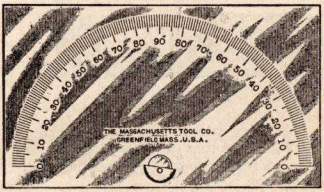
Protractor

No. 51



This protractor, which is accurately graduated in degrees, is one of the most useful articles in a machinist's tool kit. Any desired angle can be laid off by using this tool in connection with a bevel, making an expensive bevel protractor unnecessary. The bevel can be set from either edge. Sides are ground to positive 90° angle.

Price each.....(YAFVA) $2.50

Packed six in a carton.
Weight, $\frac{7}{8}$ pound.

Pattern Makers' Precision Squares

Tempered Blades

These are excellent try squares for the use of pattern makers and woodworkers. The blades are made of tempered steel, accurately parallel ground. The beam is provided with a rest so that the square will lie flat on the work without being held in position. The opening in handle gives a firm and comfortable grip. Handles are nickel plated and blades polished.

We guarantee the accuracy of these squares.

	Length of Blade	Length of Beam	Weight		Price, Each
No. 806	6 inches	4 inches	1 pound	(ZEIBT)	$2.30
No. 808	8 inches	5 inches	1 pound	(ZEIKD)	3.15
No. 810	10 inches	6 inches	1¼ pounds	(ZEIRL)	3.75

Each square packed in a carton.

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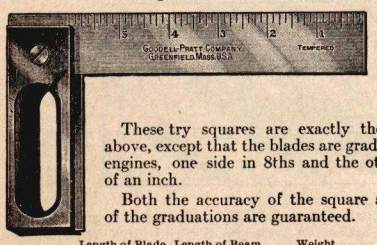
Pattern Makers' Precision Squares

Tempered and Graduated Blades



These try squares are exactly the same as those above, except that the blades are graduated on dividing engines, one side in 8ths and the other side in 16ths of an inch.

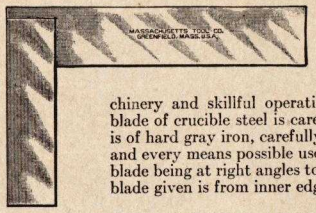
Both the accuracy of the square and the accuracy of the graduations are guaranteed.

	Length of Blade	Length of Beam	Weight		Price, Each
No. 906	6 inches	4 inches	1 pound	(ZIAJF)	$2.75
No. 908	8 inches	5 inches	1 pound	(ZIARN)	3.75
No. 910	10 inches	6 inches	1¼ pounds	(ZICIS)	4.20

These squares can be furnished with Metric graduation if desired.
Each square is packed in a carton.

Solid Beam Squares

With Tempered Steel Blades



These squares are designed to be as accurate and well finished as special machinery and skillful operatives can produce. The blade of crucible steel is carefully tempered. Beam is of hard gray iron, carefully machined and ground, and every means possible used to insure the edges of blade being at right angles to the beams. Length of blade given is from inner edge of beam.

	Length of Blade	Length of Beam	Weight		Price, Each
No. 86	3 inches	2 inches	$\frac{3}{8}$ pound	(YATEM)	$3.20
No. 87	4 inches	$2\frac{1}{2}$ inches	$\frac{1}{2}$ pound	(YATME)	5.00
No. 88	6 inches	$3\frac{1}{2}$ inches	1 pound	(YATOP)	6.40
No. 89	9 inches	5 inches	$1\frac{5}{8}$ pounds	(YATRY)	7.35
No. 90	12 inches	6 inches	2 pounds	(YAUHD)	9.20

Packed one in a carton.

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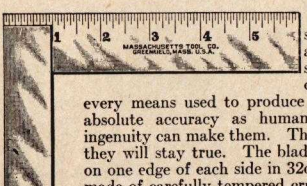
Solid Beam Squares

With Graduated Tempered Steel Blades



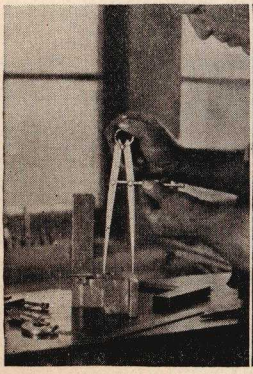
We have made these squares as accurate and as finely finished as possible, with every detail carefully considered, and every means used to produce instruments as near to absolute accuracy as human skill and mechanical ingenuity can make them. These tools are square and they will stay true. The blades are engine graduated on one edge of each side in 32ds and 64ths. They are made of carefully tempered crucible steel. Beams are hard gray iron.

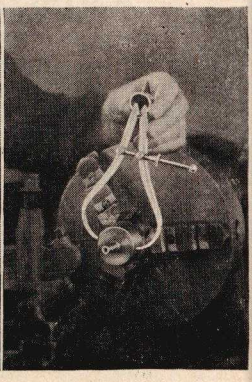
	Length of Blade	Length of Beam	Weight		Price, Each
No. 81	3 inches	2 inches	$\frac{1}{4}$ pound	(YARIL)	$3.70
No. 82	4 inches	$2\frac{1}{2}$ inches	$\frac{3}{8}$ pound	(YASAK)	5.00
No. 83	6 inches	$3\frac{1}{2}$ inches	$\frac{5}{8}$ pound	(YASKA)	6.90
No. 84	9 inches	5 inches	$1\frac{1}{2}$ pounds	(YASNO)	8.35
No. 85	12 inches	6 inches	$1\frac{3}{4}$ pounds	(YASUP)	10.85

Packed one in a carton.

PAGE
58

Toolmakers' Round Leg Calipers are preferred by many skilled mechanics. They fill every requirement





Spring Calipers and Dividers are essential tools for most every machine shop operation and consequently should be of the finest quality

Spring Calipers and Dividers

The pages immediately following show a very fine and complete line of outside, inside and special calipers and dividers. They are designed to meet the most exacting requirements of skilled machinists and toolmakers.

The stock used is a fine grade of hard crucible steel. All edges are nicely rounded and the entire tool ground and polished to a beautiful finish.

The shape of the legs and points has been developed for maximum accuracy in calipering of every description and for transferring measurements to or from a micrometer or steel rule within very close limits. Inside caliper legs are shaped to permit their use in unusually small spaces. Divider points are nicely tapered and carefully hardened and tempered.

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Precisely machined and hardened screws are used on all spring calipers and dividers. The nuts are of two types, "solid" and "quick," both of which are hardened. Solid nuts are of ordinary construction. The threaded portion of quick nuts is made in two parts which are spread apart by a small spring when the pressure of the leg is removed. This disengages the threads and the nut can then be slipped over the entire length of the screw or any portion of it very rapidly and without turning it. The instant the leg is allowed to press against the nut it engages the screw thread again and the final adjustment is made by turning the nut in the usual manner.

Side deflection in calipers or dividers destroys their value for precise work, and the greatest care is used to eliminate it from these spring calipers and dividers. Accurately machined and hardened steel spools or fulcrum studs with a good wide face are used and the bearings in the legs are carefully fitted to them. These are held in close contact by stiff, heat-treated steel springs, making a very rigid tool.

Spring dividers have a finely knurled handle riveted to the spring to facilitate the describing of arcs and circles.

Toolmakers' Spring Calipers and Dividers

Careful comparison of these beautifully made instruments will convince any one of their outstanding superiority.

They are made of hard, round, crucible steel with the legs swaged to excellent proportions. The precisely cut screw passes through one leg and is pivoted in the other. Both screw and nut are hardened.

The points of the legs are shaped to insure transfer of measurements to or from a micrometer or steel rule within very close limits.

The spool or fulcrum stud is accurately machined and hardened. The leg bearings are closely fitted to it and the pressure from the stiff tempered steel springs reduces side deflection to a minimum.

The finish on these calipers and dividers is particularly fine.

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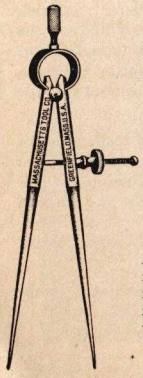
Toolmakers' Spring Dividers



The points of these divider legs are carefully hardened and tempered to resist wear and shaped for delicate and accurate work.

The spring is equipped with a small knurled handle for easy manipulation especially in scribing circles and arcs.

Furnished with solid nut only.

		Price, Each
No. 752.	Size 2 inches.....(ZAYEL)	$1.20
No. 753.	Size 3 inches.....(ZAYHZ)	1.45
No. 754.	Size 4 inches.....(ZAYKA)	1.75
No. 756.	Size 6 inches.....(ZAYNO)	2.10

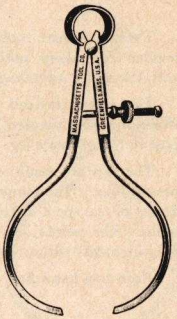
Packed one fourth dozen in a carton.

Toolmakers' Outside Spring Calipers

The legs of these calipers are round, tapered and slightly flattened at the lower end to permit shaping the points for very delicate and accurate work.

They have hardened and accurately cut screws and nuts, stiff tempered springs and hardened steel spools or fulcrum studs. They are rigid and free from side deflection. The finish throughout is particularly fine.

Furnished with solid nut only.



		Price, Each
No. 732.	Size 2 inches... (ZATUL)	$1.20
No. 733.	Size 3 inches... (ZAUCS)	1.45
No. 734.	Size 4 inches... (ZAUDT)	1.75
No. 736.	Size 6 inches... (ZAUSK)	2.10

Packed one fourth dozen in a carton.

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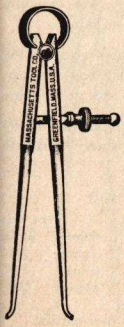
Toolmakers' Inside Spring Calipers



These tools have all the fine features of the companion tools shown above. The points are carefully shaped for delicate and accurate readings in very small holes and spaces.

The legs are nicely tapered, hard, round, crucible steel. Screw and nut hardened steel. Stiff tempered springs and carefully fitted fulcrums. Highly polished finish.

Furnished with solid nut only.

		Price, Each
No. 742.	Size 2 inches..... (ZAVLO)	$1.20
No. 743.	Size 3 inches..... (ZAVNY)	1.45
No. 744.	Size 4 inches..... (ZAVOL)	1.75
No. 746.	Size 6 inches..... (ZAVYN)	2.10

Packed one fourth dozen in a carton.

Toolmakers' Spring Calipers and Dividers

"Post Pattern"

These excellent tools have all the fine features found in the regular toolmakers' pattern fully described on the preceding pages with the added advantage of greater strength and a lower cost.

The screw, instead of passing directly through the leg, slips through a post pivoted in the leg and is fixed in a similar pivoted post in the opposite leg.

The legs are made of hard, round, crucible steel swaged to good proportions. The tempered steel spring is stiff and with the careful fitting of the spool or fulcrum stud reduce side deflection to a minimum. The points are shaped for delicate work and transferring measurements within very close limits.

Each tool has a fine, highly polished finish.

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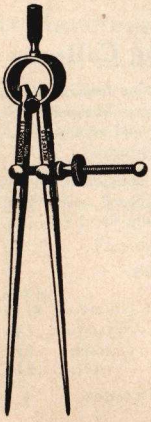
Toolmaker's Spring Dividers

"Post Pattern"



The legs of these dividers are nicely tapered to a fine point permitting delicate and accurate work. They are carefully hardened and tempered to resist wear.

A small knurled handle riveted to the spring makes the tool very easy to use particularly when scribing arcs and circles.

The stiff, tempered spring and nicely fitted fulcrum make an unusually rigid tool. Every part highly polished.

Furnished with solid nut only.

			Price, Ea
No. 852.	Size 2 inches.....	(ZEOJD)	$1.
No. 853.	Size 3 inches.....	(ZEOLG)	1.
No. 854.	Size 4 inches.....	(ZEONJ)	1.
No. 856.	Size 6 inches.....	(ZEORM)	2.

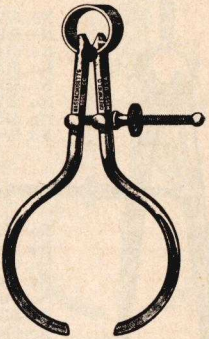
Packed one fourth dozen in a carton.

Toolmakers' Outside Spring Calipers
"Post Pattern"

The legs of these calipers are round, tapered and slightly flattened at the lower end to permit shaping the points for very delicate and accurate work.

They have hardened and accurately cut screws and nuts, stiff tempered springs and a hardened steel spool or fulcrum stud. They are rigid and free from side deflection. The finish throughout is particularly fine.

Furnished with solid nut only.



	Price, Each
No. 832. Size 2 inches (ZELED)	$1.10
No. 833. Size 3 inches (ZELGO)	1.35
No. 834. Size 4 inches (ZELIF)	1.65
No. 836. Size 6 inches (ZELOG)	2.00

Packed one fourth dozen in a carton.

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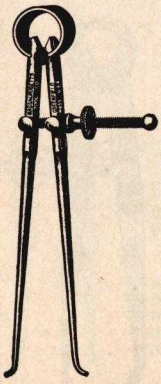
Toolmakers' Inside Spring Calipers
"Post Pattern"



These tools have all the fine features of the companion tools shown above. The points are carefully shaped for delicate and accurate readings in very small holes and spaces.

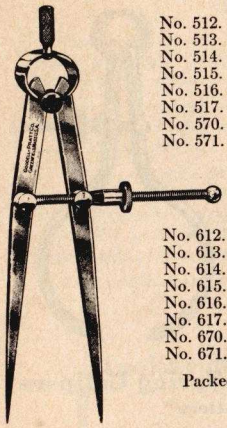
The legs are nicely tapered, hard, round, crucible steel. Screw and nut hardened steel. Stiff tempered springs and carefully fitted fulcrums. Highly polished finish.

Furnished with solid nut only.

		Price, Each
No. 842.	Size 2 inches... (ZEMFE)	$1.10
No. 843.	Size 3 inches... (ZEMHO)	1.35
No. 844.	Size 4 inches... (ZEMIG)	1.65
No. 846.	Size 6 inches... (ZEMOH)	2.00

Packed one fourth dozen in a carton.

Spring Dividers



With Solid Nut

			Price, Each
No. 512.	Size 2½	inches.....(YOZUL)	$0.80
No. 513.	Size 3	inches.....(YUAJT)	.85
No. 514.	Size 4	inches.....(YUASF)	.90
No. 515.	Size 5	inches.....(YUBAM)	.95
No. 516.	Size 6	inches.....(YUBIP)	1.05
No. 517.	Size 8	inches.....(YUBMA)	1.20
No. 570.	Size 10	inches.....(YULYE)	1.70
No. 571.	Size 12	inches.....(YUMAY)	1.85

With Quick Nut

			Price, Each
No. 612.	Size 2½	inches.....(YUVJE)	$0.95
No. 613.	Size 3	inches.....(YUVNY)	1.00
No. 614.	Size 4	inches.....(YUVUM)	1.05
No. 615.	Size 5	inches.....(YUWAJ)	1.15
No. 616.	Size 6	inches.....(YUWIL)	1.20
No. 617.	Size 8	inches.....(YUWYP)	1.35
No. 670.	Size 10	inches.....(ZAHZY)	1.85
No. 671.	Size 12	inches.....(ZAIFB)	2.00

Packed one fourth dozen in a carton.

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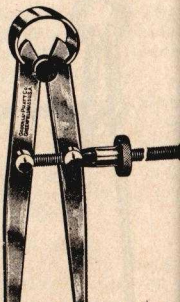
Hermaphrodite Spring Calipers



With Solid Nut

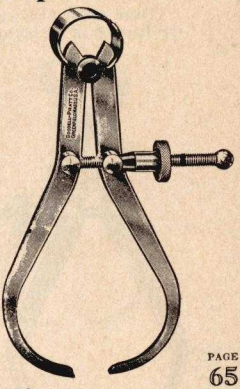
			Price, Each
No. 540.	Size 3	inches.....(YUFER)	$0.85
No. 541.	Size 4	inches.....(YUFTO)	.90
No. 542.	Size 5	inches.....(YUFWY)	1.00
No. 543.	Size 6	inches.....(YUGAR)	1.10

With Quick Nut

			Price, Each
No. 640.	Size 3	inches.....(ZACRO)	$1.00
No. 641.	Size 4	inches.....(ZACTY)	1.10
No. 642.	Size 5	inches.....(ZACUS)	1.20
No. 643.	Size 6	inches.....(ZACYT)	1.25

Packed one fourth dozen in a carton.

Outside Spring Calipers



	With Solid Nut	Price, Each
No. 500.	Size 2½ inches. (YOWDA)	$0.80
No. 501.	Size 3 inches. (YOWEF)	.85
No. 502.	Size 4 inches. (YOWIG)	.90
No. 503.	Size 5 inches. (YOWOH)	.95
No. 504.	Size 6 inches. (YOWYK)	1.05
No. 505.	Size 8 inches. (YOYFA)	1.20
No. 550.	Size 10 inches. (YUHET)	1.70
No. 551.	Size 12 inches. (YUHSA)	1.85

	With Quick Nut	Price, Each
No. 600.	Size 2½ inches. (YUPYH)	$0.95
No. 601.	Size 3 inches. (YURAD)	1.00
No. 602.	Size 4 inches. (YURFE)	1.05
No. 603.	Size 5 inches. (YURIG)	1.15
No. 604.	Size 6 inches. (YURUJ)	1.20
No. 605.	Size 8 inches. (YUSEG)	1.35
No. 650.	Size 10 inches. (ZADVY)	1.85
No. 651.	Size 12 inches. (ZADYV)	2.00

Packed one fourth dozen in a carton.

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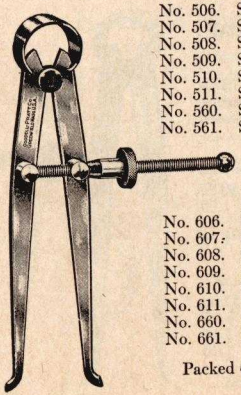
Inside Spring Calipers



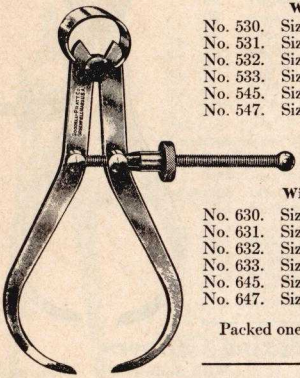
	With Solid Nut	Price, Each
No. 506.	Size 2½ inches..... (YOYMZ)	$0.80
No. 507.	Size 3 inches..... (YOYUK)	.85
No. 508.	Size 4 inches..... (YOYZM)	.90
No. 509.	Size 5 inches..... (YOZHE)	.95
No. 510.	Size 6 inches..... (YOZMY)	1.05
No. 511.	Size 8 inches..... (YOZOK)	1.20
No. 560.	Size 10 inches..... (YUJEV)	1.70
No. 561.	Size 12 inches..... (YUJOY)	1.85

	With Quick Nut	Price, Each
No. 606.	Size 2½ inches..... (YUSJO)	$0.95
No. 607.	Size 3 inches..... (YUSYL)	1.00
No. 608.	Size 4 inches..... (YUTAG)	1.05
No. 609.	Size 5 inches..... (YUTGA)	1.15
No. 610.	Size 6 inches..... (YUTKO)	1.20
No. 611.	Size 8 inches..... (YUVAH)	1.35
No. 660.	Size 10 inches..... (ZAFUV)	1.85
No. 661.	Size 12 inches..... (ZAFWY)	2.00

Packed one fourth dozen in a carton.

Outside Thread Spring Calipers

These calipers have the ends of their legs flattened for calipering the diameter at the bottom of the thread of bolts, screws, etc.



		With Solid Nut	Price, Each
No. 530.	Size 3 inches..	(YUDOS)	$0.85
No. 531.	Size 4 inches..	(YUDSO)	.90
No. 532.	Size 5 inches..	(YUDUT)	.95
No. 533.	Size 6 inches..	(YUDVY)	1.05
No. 545.	Size 8 inches..	(YUGOV)	1.35
No. 547.	Size 10 inches..	(YUGSE)	1.70

		With Quick Nut	Price, Each
No. 630.	Size 3 inches..	(ZABMA)	$1.00
No. 631.	Size 4 inches..	(ZABNE)	1.05
No. 632.	Size 5 inches..	(ZABSY)	1.15
No. 633.	Size 6 inches..	(ZABUR)	1.20
No. 645.	Size 8 inches..	(ZADIR)	1.50
No. 647.	Size 10 inches..	(ZADPA)	1.85

Packed one fourth dozen in a carton.

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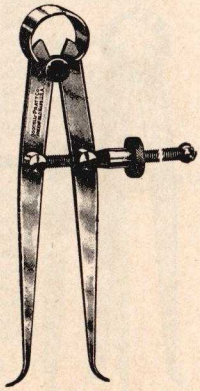
Inside Thread Spring Calipers

These calipers have their points hardened and shaped correctly for measuring the diameter at the bottom of the thread of nuts, etc.



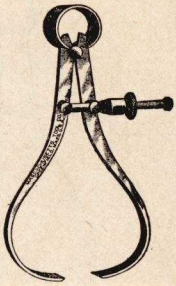
		With Solid Nut	Price, Each
No. 535.	Size 3 inches...	(YUEGS)	$0.85
No. 536.	Size 4 inches...	(YUEMZ)	.90
No. 537.	Size 5 inches...	(YUERF)	.95
No. 538.	Size 6 inches...	(YUETH)	1.00

		With Quick Nut	Price, Each
No. 635.	Size 3 inches...	(ZACAN)	$1.00
No. 636.	Size 4 inches...	(ZACEP)	1.05
No. 637.	Size 5 inches...	(ZACNA)	1.15
No. 638.	Size 6 inches...	(ZACOR)	1.20

Packed one fourth dozen in a carton.

Outside Thread Spring Calipers

Similar to the outside thread calipers on the preceding page but with wide flattened ends for measuring the outside diameters of screws. The points are wide enough to cover two or three coarse threads giving true readings.



With Solid Nut

		Price, Each
No. 519.	Size 3 inches... (YUBSY)	$1.05
No. 520.	Size 4 inches... (YUBUR)	1.10
No. 521.	Size 5 inches... (YUBYS)	1.15

With Quick Nut

		Price, Each
No. 619.	Size 3 inches... (YUZLA)	$1.20
No. 620.	Size 4 inches... (YUZME)	1.25
No. 621.	Size 5 inches... (YUZOP)	1.30

Packed one fourth dozen in a carton.

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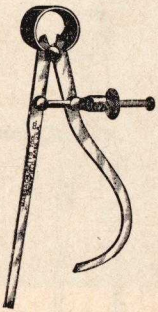
Keyhole Spring Calipers



Designed for measuring the walls of cylinders where the bore or hole is too small in diameter to permit the use of an ordinary outside caliper. Can be used to advantage in many other ways.

With Solid Nut

		Price, Each
No. 525.	Size 3 inches... (YUCPE)	$0.85
No. 526.	Size 4 inches... (YUCRO)	.90

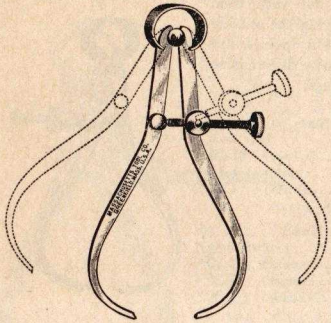
With Quick Nut

		Price, Each
No. 625.	Size 3 inches... (ZAAJT)	$1.00
No. 626.	Size 4 inches... (ZAASF)	1.05

Packed one fourth dozen in a carton.

Outside Transfer Spring Calipers

Patented February 17, 1903



Indispensable for calipering back of shoulders, etc. The reading is taken in the usual manner and the screw then locked by tightening the thumb screw provided for the purpose. The legs are then spread sufficiently to draw them over the shoulder. The stiff tempered spring then returns the legs to exactly the same position they were in when the setting was made.

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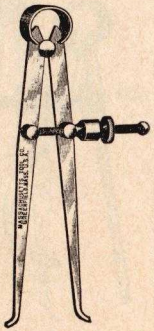
			Price, Each
No. 554.	Size 4 inches	(YUHWO)	$1.70
No. 556.	Size 6 inches	(YUIFS)	1.85
No. 558.	Size 8 inches	(YUIRG)	2.00

Packed one fourth dozen in a carton.

Inside Transfer Spring Calipers

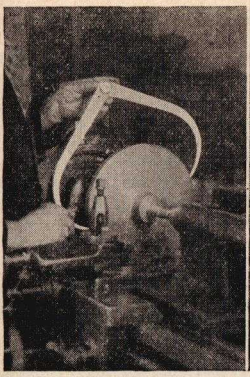
Patented February 17, 1903

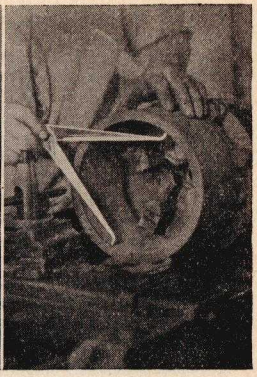
For accurate inside calipering where the legs must be compressed before the tool can be removed. The nut has an internal friction to prevent accidental change of the setting.



			Price, Each
No. 544.	Size 4 inches	(YUGIT)	$1.70
No. 546.	Size 6 inches	(YUGRA)	1.85
No. 548.	Size 8 inches	(YUGVO)	2.00

Packed one fourth dozen in a carton.





On many classes of work Firm Joint Calipers are preferred, especially on jobs where large capacity is required

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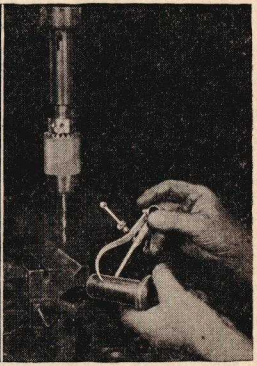

Transfer, Keyhole and Hermaphrodite Calipers are necessary and extremely useful on many kinds of work

Firm Joint Calipers and Dividers

This distinguished line of calipers and dividers is in demand on account of the excellent material from which they are made, the fine proportions of the legs, the adjustable tension of the joint and their superior finish.

They are made of spring tempered crucible steel, with all corners well rounded and the legs nicely proportioned. The points are carefully shaped for obtaining close, accurate measurements. The sizes given are the lengths of the legs, and their measuring capacity is considerably greater than their rated capacity.

Any desired tension of the joint can be secured by adjusting the friction screw. This is provided with a hexagon head on all sizes so that any ordinary wrench can be used for the purpose.

The finish is unusually fine, every part being beautifully polished.

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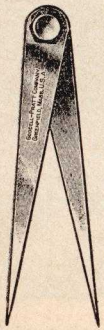
Firm Joint Dividers

Spring Tempered



For describing arcs and circles and transferring measurements to or from a steel rule, and a great variety of laying out work. The lower portion of the legs is carefully hardened and tempered and ground to a fine sharp point.

The firm joint can be adjusted to any desired degree of friction. Highly polished finish.

			Price, Each
No. 564.	Size 4 inches.....	(ZUOVG)	$0.65
No. 566.	Size 6 inches.....	(ZUOZK)	.85
No. 568.	Size 8 inches.....	(ZUPAV)	1.00

Packed one fourth dozen in a carton.

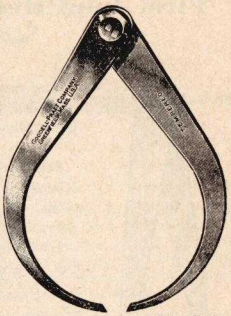
Firm Joint Outside Calipers

Spring Tempered

Made of a fine grade of hard crucible steel of ample thickness to insure a very rigid instrument in which side deflection has been reduced to the minimum.

The firm joint has a bearing of large area and is adjustable so that any desired degree of friction can be obtained by changing the tension exerted by the tension screw. This screw is provided with a hexagon head so that it can be turned with a wrench.

The sizes given below refer to the length of the legs. Their measuring capacity is considerably greater than the rated size.



			Price, Each
No. 400.	Size 3 inches outside	(YOGAM)	$0.60
No. 401.	Size 4 inches outside	(YOGIP)	.65
No. 402.	Size 5 inches outside	(YOGMA)	.75
No. 403.	Size 6 inches outside	(YOGNE)	.85
No. 404.	Size 8 inches outside	(YOGSY)	1.00
No. 405.	Size 10 inches outside	(YOGUR)	1.10
No. 406.	Size 12 inches outside	(YOGYS)	1.20
No. 407.	Size 14 inches outside	(YOHAN)	1.75
No. 408.	Size 16 inches outside	(YOHEP)	2.10
No. 409.	Size 18 inches outside	(YOHOR)	2.50
No. 410.	Size 20 inches outside	(YOHPE)	3.15
No. 411.	Size 24 inches outside	(YOHTY)	3.75

Packed one fourth dozen in a carton.

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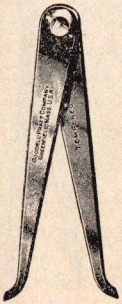


Firm Joint Inside Calipers

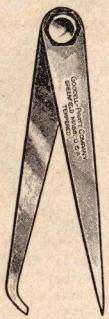
Spring Tempered

			Price, Each
No. 420.	Size 3 inches inside	(YOJOS)	$0.60
No. 421.	Size 4 inches inside	(YOJPA)	.65
No. 422.	Size 5 inches inside	(YOJSO)	.75
No. 423.	Size 6 inches inside	(YOJUT)	.85
No. 424.	Size 8 inches inside	(YOJVY)	1.00
No. 425.	Size 10 inches inside	(YOJYV)	1.10
No. 426.	Size 12 inches inside	(YOKER)	1.20
No. 427.	Size 14 inches inside	(YOKRE)	1.75
No. 428.	Size 16 inches inside	(YOKTO)	2.10
No. 429.	Size 18 inches inside	(YOKUV)	2.50
No. 430.	Size 20 inches inside	(YOKWY)	3.15
No. 431.	Size 24 inches inside	(YOLAR)	3.75

Packed one fourth dozen in a carton.

Firm Joint Hermaphrodite Calipers

With Solid Leg



The same fine material, construction and finish are put into these tools as the other firm joint calipers listed on the preceding pages.

One of the legs is an inside caliper leg and the other a divider leg with a hardened and tempered point.

Useful for a wide variety of purposes in laying out, accurate centering, etc.

			Price, Each
No. 384.	Size 4 inches	(YODKA)	$0.65
No. 386.	Size 6 inches	(YODNO)	.85
No. 388.	Size 8 inches	(YODUF)	1.00

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Packed one fourth dozen in a carton.

Firm Joint Hermaphrodite Calipers

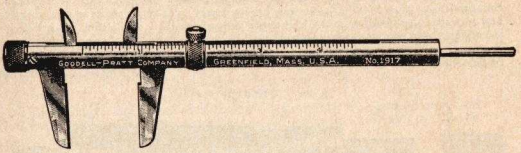
With Adjustable Point

Similar in every respect to the calipers illustrated and described above but with an adjustable point in the divider leg which is held firmly in position in the leg by a knurled thumb screw.

			Price, Each
No. 442.	Size 5 inches	(YOMTE)	$0.90
No. 443.	Size 6 inches	(YOMUX)	.95
No. 444.	Size 8 inches	(YOMWO)	1.20
No. 445.	Size 10 inches	(YONAT)	1.40

Packed one fourth dozen in a carton.

Universal Caliper
No. 1917



This remarkable instrument can be used for making any inside, outside, or depth measurements, both English and Metric, up to 4 inches or 10 centimeters. It is graduated on one side in 32ds of an inch and on the other side in millimeters. A thumb screw enables the operator to lock the jaws and depth rod in any desired position. The jaws can be easily adjusted to compensate for wear.

The entire tool is polished. Length over all, $7\frac{1}{8}$ inches. Net weight, 4 ounces.

Price, each.....(ZODJO) $2.20

Packed one in a carton, $7\frac{1}{4}$ x $2\frac{3}{4}$ x $\frac{5}{8}$ inch.

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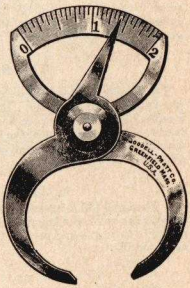
Indicating Calipers

The most convenient little caliper ever made for measuring thicknesses over shoulders or otherwise, lengths and diameters up to 2 inches.

The arc is accurately graduated in 16ths of an inch and the indicating point is nicely shaped for close readings.

Made of hard crucible steel with a beautiful polished finish. The joint has a smooth, even friction.

Measures only 3 inches over all and weighs only 1 ounce. Can be carried in the vest pocket without knowing it is there.



No. 662. 2 inch.

Price, each.....(ZAGAR) $1.10

Metric

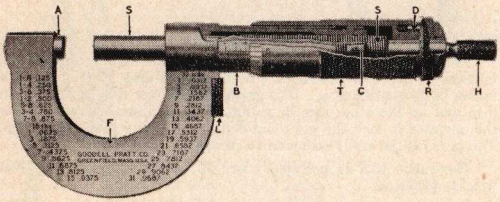
No. 672. 50 mm.

Price, each.....(ZAIGT) $1.10

Packed one fourth dozen in a carton.

Micrometer Calipers

The micrometer is the precision tool in most general use where measurements in thousandths or even 1/10000 of an inch are necessary. They are made in many styles and capacities for outside, inside, and depth measurements. While their construction is comparatively simple, the utmost care must be used in every step of their manufacture if extreme accuracy and dependability are to be secured. Adjustments for wear must be provided so that the accuracy of the instrument can be maintained.



The Frame

The frames (F) are steel forgings of good proportions and designed to secure the strength and rigidity that is essential. In the larger and a few of the smaller sizes the frames are forged in I beam form to secure rigidity without undue weight.

The Barrel

The barrel (B) carries the threaded steel bushing in which the micrometer or lead screw runs and is part of the forged frame. The threaded bushing has an adjustable collar for taking up any wear at this point. One inch divided into 40ths is graduated on the barrel, each graduation representing one revolution of the lead screw.

The Spindle and Lead Screw

The spindle and lead screw (S) in all Goodell-Pratt micrometers is made of one solid piece of very fine tool steel. It is accurately machined and then allowed to season for months before the final precision machining and finishing is done. This precaution is taken to avoid shrinkage of the finished screw and spindle. All machine operations are within extreme precision limits on machines specially developed and perfected for the purpose.

The Anvil

The anvil (A) is set in the frame in perfect alignment with the spindle. The faces of both the anvil and spindle are lapped with the utmost care so that they are at right angles to their axis and parallel to each other. Proper adjustment for wear of the anvil is provided.

The Thimble

The thimble (T) is rigidly fixed to the lead screw and spindle and fits down over the barrel but does not touch it. The slightest turn of the thimble results in a similar movement of the lead screw. The beveled end of the thimble is graduated into 25 equal divisions.

Ratchet Stop

The G-P ratchet stop (R) mechanism can be easily operated by the thumb and forefinger of the same hand that holds the micrometer. This leaves one hand entirely free for holding the work to be "miked." This new departure from the old practice of combining the ratchet stop with the speeder at the end of the thimble has proven very popular because it is both convenient and speeds up work. The tension in the ratchet mechanism is nicely adjusted so that when the knurled ratchet ring is turned it ratchets when just the right amount of pressure is exerted on the spindle to give accurate readings. The ratchet stop insures uniformly accurate reading as it entirely eliminates the personal equation.

The Speeder

A knurled handle (H) of small diameter, provided on many sizes, is fixed to the end of the thimble. By turning this speeder between the thumb and forefinger the spindle can be run in or out very rapidly as required.

Spindle Lock

A spindle lock (L) is provided on many sizes. This lock is controlled by turning a knurled nut located on the frame directly under the barrel. A slight turn of the nut locks the spindle securely, preserving the setting at any desired point. The No. 112R micrometer has the lock nut located directly on the spindle where it runs through the frame.

Accuracy, Workmanship and Finish

The extreme care with which Goodell-Pratt micrometers are made, the special precision machinery used, the highly skilled craftsmen employed, and the pride we take in our product, permit us to recommend and unconditionally guarantee the accuracy, workmanship and finish of this fine line, no matter how exacting the requirements may be.

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How to Read a Micrometer

To the frame (F) is immovably fixed the barrel (B). On the inside of this barrel is a very accurately threaded bushing with a pitch of 40 threads per inch. The hidden portion of the spindle (S) is also threaded with 40 threads per inch and runs in the nut formed by the barrel (B). The extreme right end of the spindle (S) is securely fastened to the thimble (T). These are the only moving parts and they move in unison.

An inch of the line on the barrel (B) parallel to its axis is graduated into 40 equal parts corresponding exactly to the threads per inch on the screw of the spindle (S). When the thimble (T) is given one complete rotation the spindle must move just one graduation, or 1/40 of an inch, which is 25/1000 of an inch. The beveled edge of the thimble (T) is divided into 25 equal graduations; each of these must, therefore, represent 1/25 of 1/40 of an inch, or 1/1000 of an inch. The instrument is so graduated and adjusted that when the face of the spindle (S) just touches the fixed anvil (A) the 0 graduation on the thimble (T) exactly coincides with the 0 graduation on the barrel (B).

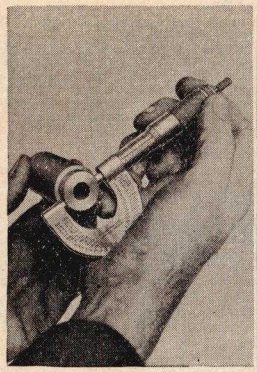
To get the measurement between the fixed anvil (A) and the face of the spindle (S), multiply the number of divisions visible on the barrel (B) by 25 and add the number of divisions on the thimble (T) from 0 to the graduation opposite the longitudinal line on the barrel (B).

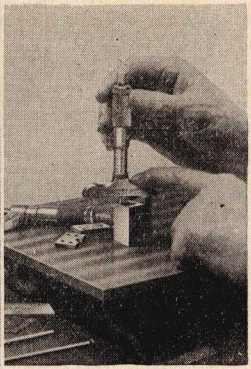
To facilitate reading, every fourth graduation on the barrel (B) is numbered 1, 2, 3, 4, etc., the figure representing respectively 0, .100", .200", .300", .400", etc. For the same reason every fifth division on the thimble graduation is numbered.

Reading Ten-Thousandths Micrometers

Micrometers that read to one ten-thousandths of an inch have exactly the same graduations as those reading to one-thousandths, with the addition of a vernier reading to 1/10 of the 1/1000 graduations.

There are ten vernier divisions which run the entire length of the barrel (B) and are numbered on the top of the frame, as shown in the cut of the No. 902. These ten vernier divisions correspond exactly to nine of the divisions on the thimble (T). So that the number opposite the line on the vernier that exactly corresponds with a line on the thimble graduations gives the number of ten-thousandths of an inch the micrometer has been opened beyond the last .001 inch graduation.





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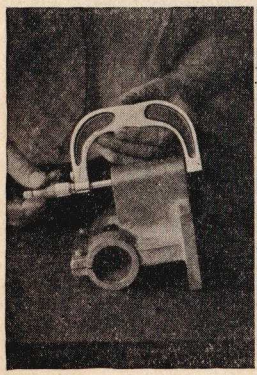
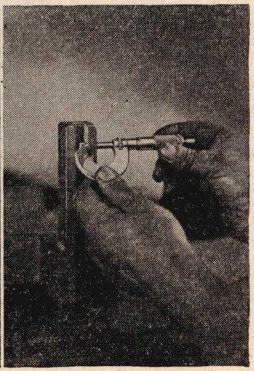
The easy manipulation of the Ratchet Stop on G.-P. Micrometers and Depth Gauges is clearly shown in these illustrations

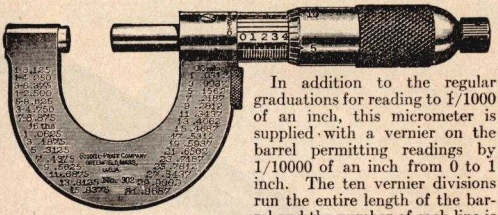




The many styles and capacities of Micrometers in the G.-P. Line satisfy every condition and requirement

No. 902 Micrometer Caliper

Range 0 to 1" by Ten Thousandths of an Inch



In addition to the regular graduations for reading to 1/1000 of an inch, this micrometer is supplied with a vernier on the barrel permitting readings by 1/10000 of an inch from 0 to 1 inch. The ten vernier divisions run the entire length of the barrel and the number of each line is clearly marked on the frame, as shown in the cut. The thimble is shaped for very delicate setting. Decimal equivalents are etched on the frame. Spindle lock and speeder provided. Every necessary compensation for wear provided.

Price, each.....(ZEZWY) $11.25
Price of leather case.....(WYDDA) 1.25

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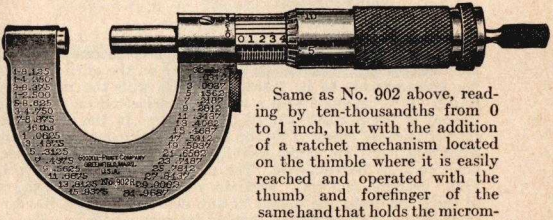
No. 902 R Micrometer Caliper

Range 0 to 1" by Ten Thousandths of an Inch



Same as No. 902 above, reading by ten-thousandths from 0 to 1 inch, but with the addition of a ratchet mechanism located on the thimble where it is easily reached and operated with the thumb and forefinger of the same hand that holds the micrometer. The ratchet stop insures uniform and accurate readings by applying just the proper pressure on the spindle for every reading. Frame etched with decimal equivalents. Equipped with spindle lock nut and speeder at end of the thimble.

Price, each.....(ZIABX) $11.75
Price of leather case.....(WYDDA) 1.25

No. 112 R Micrometer

Range 0 to 1″ Cut-away Frame Ratchet Stop

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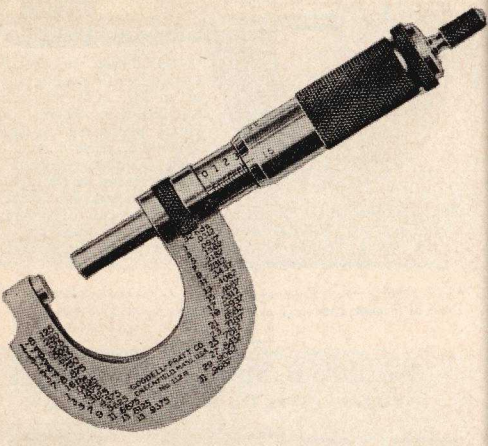


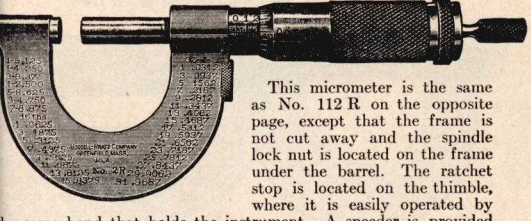
This micrometer embodies more desirable refinements than any micrometer made. The frame is cut away on the anvil side allowing measurements to be taken, impossible with the regular style frame. It is equipped with a ratchet stop located on the thimble instead of being made part of the speeder. In this location the ratchet is easily operated by the thumb and forefinger of the same hand that holds the frame, leaving the other hand entirely free to hold work to be calipered. The ratchet tension is smooth and even, insuring uniformly accurate readings. A clamp ring set in the frame locks the spindle at any desired point. A speeder is provided on the end of the thimble for running the spindle in or out rapidly.

Measures by one-thousandths of an inch from 0 to 1 inch. Decimal equivalents etched on the drop-forged steel frame. Every necessary compensation for wear provided.

Price, each..... (YAZTU) $10.00
Price of leather case..... (WYDDA) 1.25

No. 2 R Micrometer Caliper

Range 0 to 1" Ratchet Stop



This micrometer is the same as No. 112 R on the opposite page, except that the frame is not cut away and the spindle lock nut is located on the frame under the barrel. The ratchet stop is located on the thimble, where it is easily operated by the same hand that holds the instrument. A speeder is provided at the end of the spindle.

Measures by one-thousandths of an inch from 0 to 1 inch. Decimal equivalents etched on the frame. Every necessary compensation for wear is provided.

Price, each ..... (WYCOG) $10.00
Price of leather case ..... (WYDDA) 1.25

Metric

No. 2 MR. For measurements by 1/100 mm. from 0 to 25 mm.
Price, each ..... (WYDAD) $10.00

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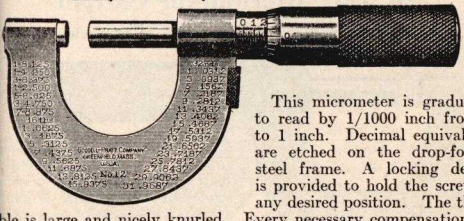
No. 12 Micrometer Caliper

Range 0 to 1" by Thousandths of an Inch



This micrometer is graduated to read by 1/1000 inch from 0 to 1 inch. Decimal equivalents are etched on the drop-forged steel frame. A locking device is provided to hold the screw in any desired position. The thimble is large and nicely knurled. Every necessary compensation for wear is provided.

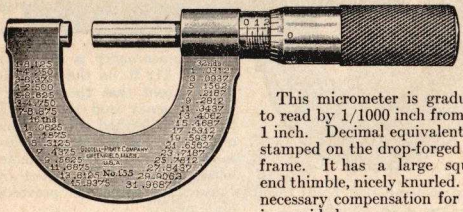
Price, each ..... (WYKUP) $9.35
Price of leather case ..... (WYDDA) 1.25

Metric

No. 12 M. For measurements by 1/100 mm. from 0 to 25 mm.
Price, each ..... (WYLAL) $9.35

No. 155 Micrometer Caliper

Range 0 to 1″ by Thousandths of an Inch



This micrometer is graduated to read by 1/1000 inch from 0 to 1 inch. Decimal equivalents are stamped on the drop-forged steel frame. It has a large square-end thimble, nicely knurled. All necessary compensation for wear is provided.

Price, each ..... (YEFFO) $8.35
Price of leather case ..... (WYDDA) 1.25

Metric

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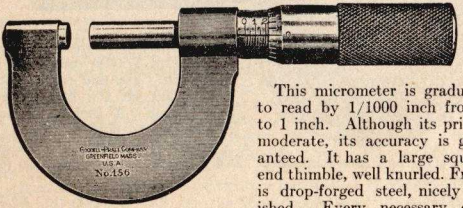
No. 155 M. Same as No. 155, for measurements by 1/100 mm. from 0 to 25 mm.

Price, each ..... (YEFHY) $8.35

No. 156 Micrometer Caliper

Range 0 to 1″ by Thousandths of an Inch

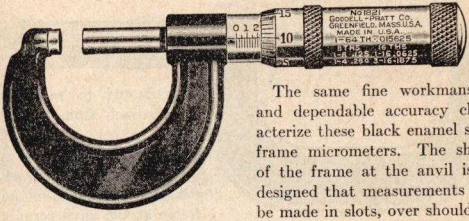


This micrometer is graduated to read by 1/1000 inch from 0 to 1 inch. Although its price is moderate, its accuracy is guaranteed. It has a large square-end thimble, well knurled. Frame is drop-forged steel, nicely finished. Every necessary compensation for wear is provided.

Price, each ..... (YEFID) $6.25
Price of leather case ..... (WYDDA) 1.25

No. 1821 Micrometer Caliper

Range 0 to 1″ Black Enamel Frame



The same fine workmanship and dependable accuracy characterize these black enamel steel frame micrometers. The shape of the frame at the anvil is so designed that measurements can be made in slots, over shoulders, etc.

Measures by one-thousandths of an inch from 0 to 1 inch. Decimal equivalents are marked on the thimble. Quick, positive adjustment for wear provided.

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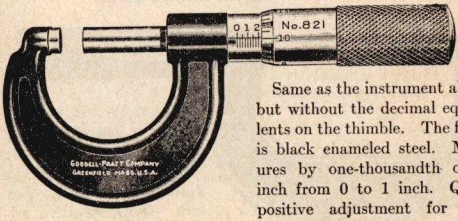
Price, each.....(ZOCUM) $6.25
Price of leather case.....(WYDDA) 1.25

No. 821 Micrometer Caliper

Range 0 to 1″ Black Enamel Frame

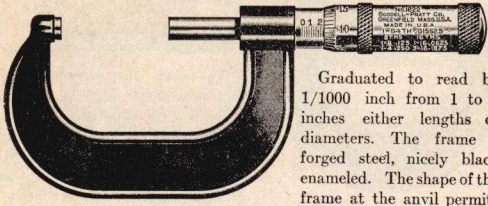


Same as the instrument above, but without the decimal equivalents on the thimble. The frame is black enameled steel. Measures by one-thousandth of an inch from 0 to 1 inch. Quick, positive adjustment for wear provided.

Price, each.....(ZEKBO) $5.75
Price of leather case.....(WYDDA) 1.25

No. 1822 Micrometer Caliper

Range 1" to 2" Black Enamel Frame



Graduated to read by 1/1000 inch from 1 to 2 inches either lengths or diameters. The frame is forged steel, nicely black enameled. The shape of the frame at the anvil permits measurements in slots, over shoulders, etc., otherwise not possible.

Decimal equivalents are clearly marked on the thimble. Quick, positive adjustment for wear provided.

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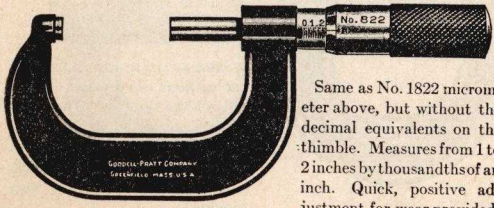
Price, each ..... (ZOCUT) $7.00
Price of leather case ..... (WYUSY) 1.60

No. 822 Micrometer Caliper

Range 1" to 2" Black Enamel Frame

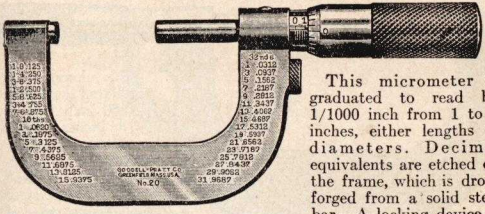


Same as No. 1822 micrometer above, but without the decimal equivalents on the thimble. Measures from 1 to 2 inches by thousandths of an inch. Quick, positive adjustment for wear provided.

Price, each ..... (ZEKBY) $6.50
Price of leather case ..... (WYUSY) 1.60

No. 20 Micrometer Caliper

Range 1″ to 2″ by Thousandths of an Inch



This micrometer is graduated to read by 1/1000 inch from 1 to 2 inches, either lengths or diameters. Decimal equivalents are etched on the frame, which is drop-forged from a solid steel bar. A locking device is provided to hold the spindle in any desired position. Every necessary compensation for wear is provided.

Price, each.....(WYUFK) $10.50
Price of leather case.....(WYUSY) 1.65

Metric

No. 20 M. For measurements by 1/100 mm. from 25 mm. to 50 mm.

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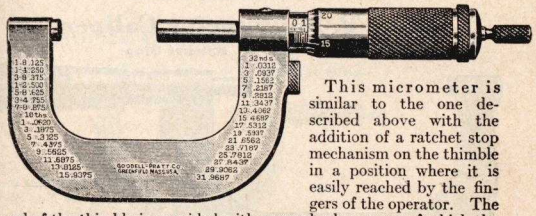
Price, each.....(WYUJN) $10.50

No. 20 R Micrometer Caliper

Range 1″ to 2″ Ratchet Stop



This micrometer is similar to the one described above with the addition of a ratchet stop mechanism on the thimble in a position where it is easily reached by the fingers of the operator. The end of the thimble is provided with a speeder by means of which the screw can be rapidly run back and forth.

Price, each.....(WYUHM) $11.00
Price of leather case.....(WYUSY) 1.65

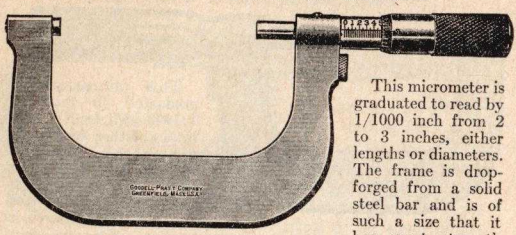
Metric

No. 20 MR. For measurements by 1/100 mm. from 25 mm. to 50 mm.

Price, each.....(WYUPT) $11.00

No. 21 Micrometer Caliper

Range 2″ to 3″ by Thousandths of an Inch



This micrometer is graduated to read by 1/1000 inch from 2 to 3 inches, either lengths or diameters. The frame is drop-forged from a solid steel bar and is of such a size that it has great strength and rigidity without undue weight. A locking device is provided to hold the spindle in any desired position. Every necessary compensation for wear is provided.

Price, each ..... (WYUVB) $10.00
Price of leather case ..... (WYNRO) 3.00

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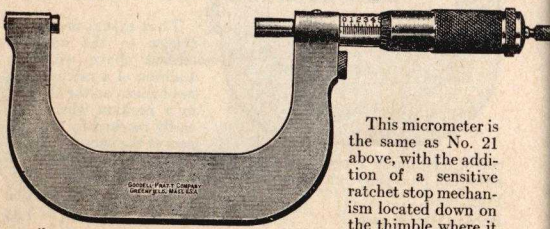
Metric

No. 21 M. For measurements by 1/100 mm. from 50 mm. to 75 mm.

Price, each ..... (WYUXD) $10.00

No. 21 R Micrometer Caliper

Range 2″ to 3″ Ratchet Stop

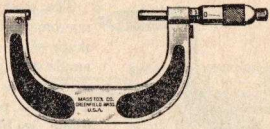


This micrometer is the same as No. 21 above, with the addition of a sensitive ratchet stop mechanism located down on the thimble where it is easily reached and operated by the same hand that holds the micrometer. A lock nut and speeder are also provided.

Price, each ..... (WYOWO) $10.50
Price of leather case ..... (WYNRO) 3.00

No. 22 Micrometer Caliper

Range 3″ to 4″ by Thousandths of an Inch



The steel frame of this micrometer is forged in the form of an I beam to give it ample strength and rigidity without too much weight. The web portion of the frame is black enameled and the edges nicely polished. It is graduated to read by 1/1000 of an inch from 3 to 4 inches either lengths or diameters. Provided with both lock nut and speeder.

Price, each ..... (WYVIX) $10.85
Price of leather case ..... (WYVUB) 3.50

Metric

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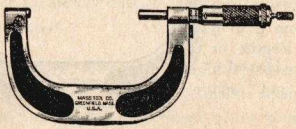
No. 22 M. For measurements by 1/100 mm. from 75 mm. to 100 mm.

Price, each ..... (WYVOZ) $10.85

No. 22 R Micrometer Caliper

Range 3″ to 4″ Ratchet Stop

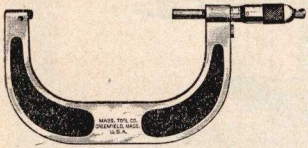


This is the same as the instrument described above, with the addition of a sensitive ratchet-stop mechanism located on the thimble where it is easily operated with one hand. Provided with a lock nut and speeder.

Price, each ..... (WYUWO) $11.35
Price of leather case ..... (WYVUB) 3.50

No. 23 Micrometer Caliper

Range 4″ to 5″ by Thousandths of an Inch



The steel frame of this micrometer is forged in the shape of an I beam to give ample strength and rigidity without too much weight. The web portion of the frame is black enameled and the edges nicely polished. It is graduated to read by 1/1000 of an inch from 4 to 5 inches either lengths or diameters. Provided with both lock nut and speeder.

Price, each..... (WYVZO) $11.90
Price of leather case..... (WYPIR) 4.60

Metric

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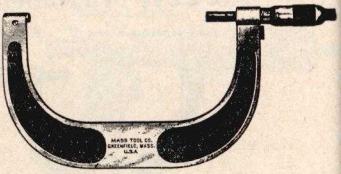
No. 23 M. For measurements by 1/100 mm. from 100 mm. to 125 mm.
Price, each ..... (WYWIZ) $11.90

No. 24 Micrometer Caliper

Range 5″ to 6″ by Thousandths of an Inch

Same as the No. 23 micrometer above, but of larger capacity, being graduated to read by 1/1000 of an inch from 5 to 6 inches either lengths or diameters. Provided with spindle lock nut and speeder.



Price, each..... (WYWUC) $13.00
Price of leather case..... (WYPIR) 4.60

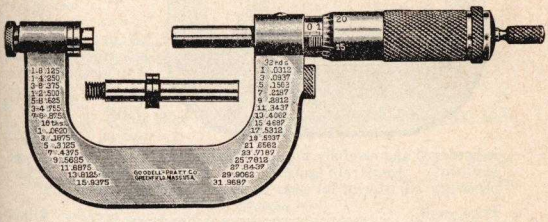
Metric

No. 24 M. For measurements by 1/100 mm. from 125 mm. to 150 mm.
Price, each..... (WYWYE) $13.00

Micrometer Caliper

No. 882 R

Range 0 to 2″ Ratchet Stop



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This micrometer is built on a two-inch frame and is provided with two anvils, giving a capacity of from 0 to 2 inches by 1/1000 of an inch. The anvils are quickly and easily interchangeable.

As a large proportion of the work ordinarily encountered lies within the range of this micrometer, it makes a particularly useful instrument. Its price offers a very considerable saving over the cost of a one-inch and a two-inch micrometer to take its place.

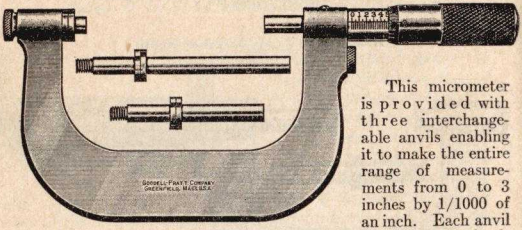
The frame is a beautifully finished forging with decimal equivalents clearly etched on it.

The same fine ratchet stop is provided. This has a smooth, even tension and is located down on the thimble where it can be easily operated by the thumb and forefinger of the same hand that holds the frame, leaving the other hand entirely free to hold the piece to be calipered. A speeder and lock nut are also provided.

Price, each	(ZETAL)	$13.75
Price of leather case	(WYUSY)	1.65

No. 14 Micrometer Caliper

Range 0 to 3″ by Thousandths of an Inch



This micrometer is provided with three interchangeable anvils enabling it to make the entire range of measurements from 0 to 3 inches by 1/1000 of an inch. Each anvil is hardened and carefully fitted. They have a special means of adjustment. Anvils are quickly and easily interchanged. Every necessary adjustment for wear is provided and also a lock nut.

Price, each..... (WYNOR) $19.20
Price of leather case..... (WYNRO) 3.00

Metric

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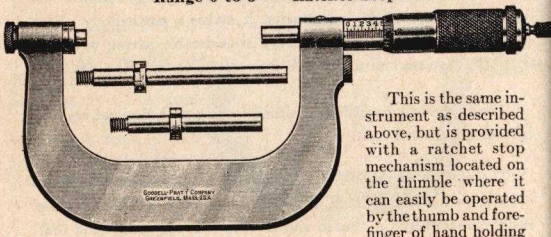
No. 14 M. For measurements from 0 to 75 mm. by 1/100 mm.
Price, each..... (WYNPE) $19.20

No. 14 R Micrometer Caliper

Range 0 to 3″ Ratchet Stop



This is the same instrument as described above, but is provided with a ratchet stop mechanism located on the thimble where it can easily be operated by the thumb and forefinger of hand holding the frame of the micrometer. Provided with lock nut and speeder.

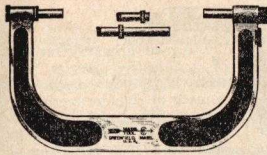
Price, each..... (WYNOX) $19.70
Price of leather case..... (WYNRO) 3.00

Metric

No. 14 MR. For measurements from 0 to 75 mm. by 1/100 mm.
Price, each..... (WYNPK) $19.70

No. 15 Micrometer Caliper

Range 3″ to 6″ by Thousandths of an Inch



These micrometer calipers are provided with extra anvils enabling them to make a greater range of measurements. Each anvil is carefully hardened and provided with special means of adjustment. They are quickly and easily adjusted in the frame.

No. 15. With three anvils, for measurements by 1/1000 inch from 3 to 6 inches.

Price, each	(WYOZD)	$19.60
Price of leather case	(WYPIR)	4.60

Metric

No. 15 M. With three anvils, for measurements by 1/100 mm. from 75 to 150 mm.

Price, each	(WYPAP)	$19.60

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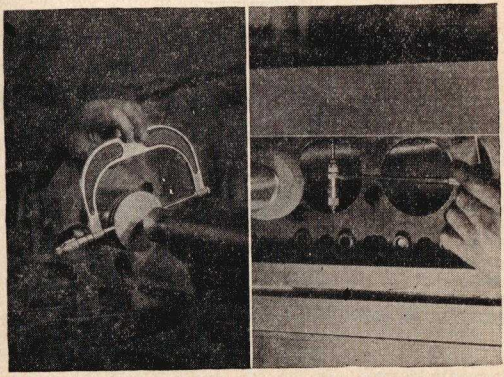
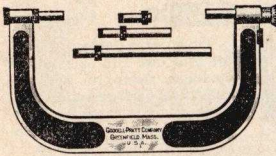


Outside and Inside Micrometers No. 622 and No. 618, covers every requirement for automobile cylinder reconditioning and piston fitting

No. 622 Micrometer Caliper

Range 2″ to 6″ by Thousandths of an Inch



Designed primarily for use of automotive service and repair shops where a specialty is made of cylinder regrinding or honing and piston replacements. It is graduated to read by 1/1000 inch from 2 to 6 inches, covering the entire range of automobile engine pistons. The four anvils are easily interchangeable and are provided with special adjustments. Equipped with spindle lock and speeder. Every necessary adjustment for wear provided.

Price, each..... (YUZPO) $20.00
Price of leather case..... (WYPIR) 4.60

Metric

No. 622 M. With four anvils, for measurements by 1/100 mm. from 50 to 150 mm.

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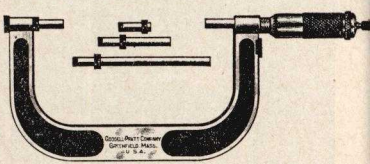
Price, each..... (YUZRY) $20.00

No. 622 R Micrometer Caliper

Range 2″ to 6″ Ratchet Stop



Same as the No. 622 above, with the addition of a ratchet stop located on the thimble within easy reach. It can easily be operated with the thumb and forefinger of the same hand that holds the frame. It insures uniformly accurate readings. The four anvils give a range of from 2 to 6 inches and are easily and quickly interchangeable.

Price, each..... (YUZPM) $20 50
Price of leather case..... (WYPIR) 4.60

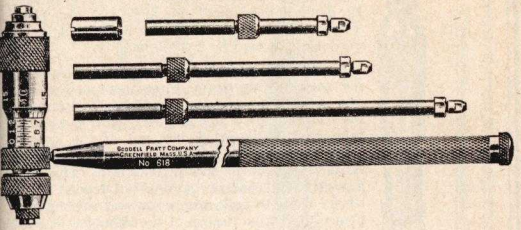
Metric

No. 622 MR. With four anvils, for measurement by 1/100 mm. from 50 to 150 mm.

Price, each..... (YUZTO) $20.50

No. 618 Inside Micrometer

Range 2″ to 6″ Inside by Thousandths of an Inch



The many exclusive features found in this inside micrometer will commend it to any one who has use for such an instrument. It makes all inside measurements by 1/1000 inch from 2 to 6 inches. This covers the entire range of automobile engine cylinders, making it a particularly valuable tool wherever cylinders are reground or honed.

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The lead screw is precisely cut and has a ½ inch run. Four easily interchangeable measuring rods are furnished and also a hardened steel collar ½ inch in length which can be slipped over the shank of any rod. For measurements from the even inch to the next half inch the collar is not used, but for measurements from ½ inch to the next inch the collar is slipped over the shank of the rod in use, which raises the rod shoulder ½ inch away from the chuck face.

Two sets of graduations permit direct readings, eliminating any computation for the use of the collar. When the collar is not in use, direct readings are made on the upper set of graduations. When the collar is in use, direct readings are made on the lower graduations.

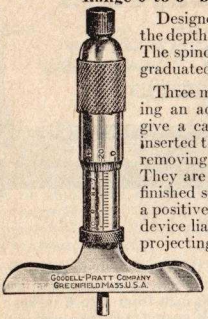
The correctness of the measuring capacity and the distances between the anvils are insured by the shoulder on each rod which comes to a positive seat against the end of the chuck. This does away with the possibility of dirt collecting inside of the chuck and preventing the rods from seating properly. Wear of the rods may be compensated for by loosening the binding nut and adjusting the hardened steel anvil in the end of each rod.

Each micrometer is furnished with a long handle for use in places that cannot be reached with the hand. Extra rods not in use are kept inside of this hollow handle where they are always readily accessible and are protected from dirt or damage.

Price, each, complete with handle, rods and collar... (YUZAL) $10.00
Price of leather case..... (YUZEM) 1.65

No. 31 Micrometer Depth Gauge

Range 0 to 3" by Thousandths of an Inch



Designed to make accurate measurements of the depth of holes, slots, shoulders, and projections. The spindle has a full one-inch movement, and is graduated to read by 1/1000 inch.

Three measuring rods with hardened ends, carrying an adjusting device to compensate for wear, give a capacity of 0 to 3 inches. The rods are inserted through a hole in the measuring screw by removing the knurled end nut of the spindle. They are brought to a positive bearing against a finished seat on the end of the screw. This gives a positive end contact that does not depend on any device liable to be lost or worn, and without rods projecting above the top of the thimble.

The base is 2½ inches long, 1½ inch wide, hardened, ground and accurately hand lapped at right angles to the rods.

Price, each	(YAALC)	$8.35
Price of leather case	(YAASK)	1.65
Extra Set of 3 Rods for measurements 3 to 6 inches		2.90
Extra Set of 6 Rods for measurements 6 to 12 inches		8.35

Metric

No. 31 M. For measurements by 1/100 mm. from 0 to 75 mm.
Price, each (YAANF) $8.35

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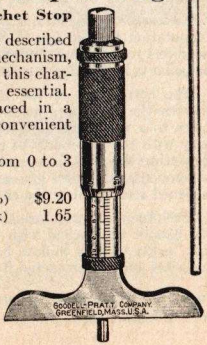
No. 31 R Micrometer Depth Gauge

Range 0 to 3" Ratchet Stop



This depth gauge is similar to the one described above with the addition of a ratchet mechanism, which is particularly useful on a tool of this character where a very delicate touch is essential. The ratchet is operated by a ring placed in a position on the thimble where it is convenient to the fingers of the operator.

Graduated to read by 1/1000 inch from 0 to 3 inches. Three rods furnished.

Price, each	(YAAMD)	$9.20
Price of leather case	(YAASK)	1.65

Extra sets of rods same as for No. 31.

Metric

No. 31 MR. For measurements by 1/100 mm. from 0 to 75 mm.
Price, each (YAARJ) $9.20

No. 32 Micrometer Depth Gauge

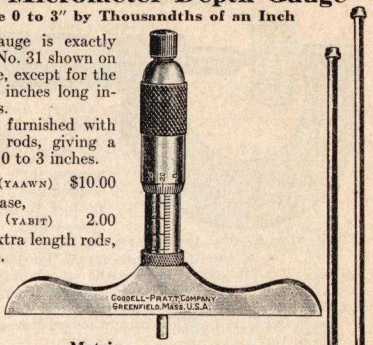
Range 0 to 3″ by Thousandths of an Inch

This depth gauge is exactly the same as our No. 31 shown on the opposite page, except for the base, which is 4 inches long instead of 2½ inches.

Each gauge is furnished with three measuring rods, giving a capacity of from 0 to 3 inches.

Price, each..... (YAAWN) $10.00
Price of leather case, (YABIT) 2.00

For prices of extra length rods, see opposite page.



Metric

No. 32 M. For measurements by 1/100 mm. from 0 to 75 mm.
Price, each..... (YABAR) $10.00

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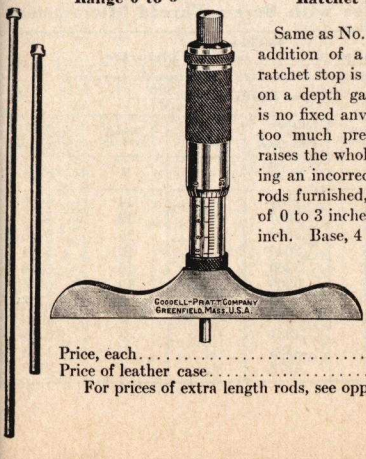
No. 32 R Micrometer Depth Gauge

Range 0 to 3″ **Ratchet Stop**

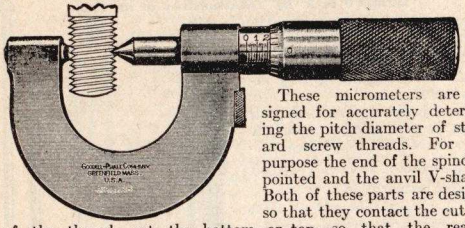


Same as No. 32 above with the addition of a ratchet stop. A ratchet stop is of particular value on a depth gauge because there is no fixed anvil and just a little too much pressure on the rod raises the whole instrument, giving an incorrect reading. Three rods furnished, giving a capacity of 0 to 3 inches by 1/1000 of an inch. Base, 4 inches long.

Price, each..... (YAAXO) $10.85
Price of leather case..... (YABIT) 2.00

For prices of extra length rods, see opposite page.

Screw Thread Micrometers



These micrometers are designed for accurately determining the pitch diameter of standard screw threads. For this purpose the end of the spindle is pointed and the anvil V-shaped. Both of these parts are designed so that they contact the cut face of the thread—not the bottom or top—so that the reading of the instrument gives the pitch diameter. In the small diagram the spindle is shown closed and the reading on the thimble 0 corresponds with the line AB in the diagram.

For V and U. S. or Whitworth Standard threads.

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		Capacity		Price, Each
No. 33.	For 8 to 13 Pitch	1 inch	(YABSE)	$11.90
No. 33A.	For 14 to 20 Pitch	1 inch	(YABVO)	11.90
No. 33B.	For 22 to 30 Pitch	1 inch	(YABYX)	11.90
No. 33C.	For 32 to 40 Pitch	1 inch	(YACAS)	11.90
No. 34.	For $4\frac{1}{2}$ to 7 Pitch	2 inch	(YACIV)	14.60

Table for Use with Screw Thread Micrometers

V-Threads
Caliper Reading or Pitch Diameter

D=Theoretical Diameter N=Threads per Inch

Caliper Reading=D-$\frac{.866}{N}$

Diam. Inches	Threads per Inch	Caliper Reading or Pitch Diam.	Diam. Inches	Threads per Inch	Caliper Reading or Pitch Diam.
D	N	D-$\frac{.866}{N}$	D	N	D-$\frac{.866}{N}$
$\frac{1}{4}$	24	.2139	$\frac{9}{16}$	14	.5006
$\frac{1}{4}$	20	.2067	$\frac{9}{16}$	12	.4903
$\frac{5}{16}$	20	.2692	$\frac{5}{8}$	11	.5463
$\frac{5}{16}$	18	.2644	$\frac{5}{8}$	10	.5384
$\frac{3}{8}$	18	.3269	$\frac{11}{16}$	10	.6009
$\frac{3}{8}$	16	.3209	$\frac{3}{4}$	10	.6634
$\frac{7}{16}$	16	.3834	$\frac{7}{8}$	9	.7788
$\frac{7}{16}$	14	.3756	1	8	.8918
$\frac{1}{2}$	14	.4381	$1\frac{1}{8}$	8	1.0168
$\frac{1}{2}$	13	.4334	$1\frac{1}{4}$	7	1.1263
$\frac{1}{2}$	12	.4278	$1\frac{1}{2}$	6	1.3557

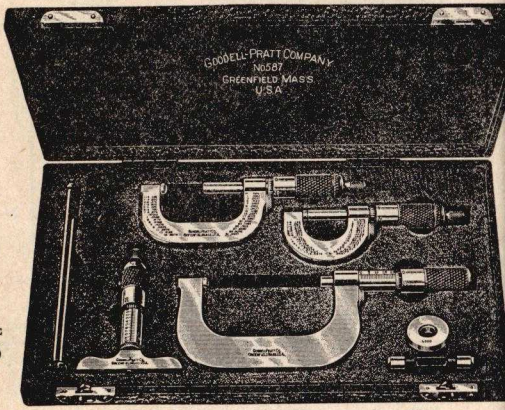
Table for Use with Screw Thread Micrometers

American and U. S. Standard Screw Threads

Pitch Diameter=Outside Diam.—Depth of Thread

COARSE THREAD SERIES				FINE THREAD SERIES			
Size		Threads per Inch	Cal. Reading or Pitch Diam.	Size		Threads per inch	Cal. Reading or Pitch Diam.
Number or Fraction	Decimal	N	D-$\frac{.6495}{N}$	Number or Fraction	Decimal	N	D-$\frac{.6495}{N}$
1	.0730	64	.0629	0	.0600	80	.0519
2	.0860	56	.0744	1	.0730	72	.0640
3	.0990	48	.0855	2	.0860	64	.0759
4	.1120	40	.0958	3	.0990	56	.0874
5	.1250	40	.1088	4	.1120	48	.0985
6	.1380	32	.1177	5	.1250	44	.1102
8	.1640	32	.1437	6	.1380	40	.1218
10	.1900	24	.1629	8	.1640	36	.1460
12	.2160	24	.1889	10	.1900	32	.1697
$\frac{1}{4}$	.2500	20	.2175	12	.2160	28	.1928
$\frac{5}{16}$	.3125	18	.2764	$\frac{1}{4}$	.2500	28	.2268
$\frac{3}{8}$	.3750	16	.3344	$\frac{5}{16}$	.3125	24	.2854
$\frac{7}{16}$	.4375	14	.3911	$\frac{3}{8}$	.3750	24	.3479
$\frac{1}{2}$	.5000	13	.4500	$\frac{7}{16}$	.4375	20	.4050
$\frac{9}{16}$	.5625	12	.5084	$\frac{1}{2}$	.5000	20	.4675
$\frac{5}{8}$	.6250	11	.5660	$\frac{9}{16}$	.5625	18	.5264
$\frac{3}{4}$	.7500	10	.6850	$\frac{5}{8}$	.6250	18	.5889
$\frac{7}{8}$	.8750	9	.8028	$\frac{3}{4}$	.7500	16	.7094
1	1.0000	8	.9188	$\frac{7}{8}$	.8750	14	.8286
$1\frac{1}{8}$	1.1250	7	1.0322	1	1.0000	14	.9536
$1\frac{1}{4}$	1.2500	7	1.1572	$1\frac{1}{8}$	1.1250	12	1.0709
$1\frac{1}{2}$	1.5000	6	1.3917	$1\frac{1}{4}$	1.2500	12	1.1959
$1\frac{3}{4}$	1.7500	5	1.6201	$1\frac{1}{2}$	1.5000	12	1.4459
2	2.0000	$4\frac{1}{2}$	1.8557	$1\frac{3}{4}$	1.7500	12	1.6959
$2\frac{1}{4}$	2.2500	$4\frac{1}{2}$	2.1057	2	2.0000	12	1.9459
$2\frac{1}{2}$	2.5000	4	2.3376	$2\frac{1}{4}$	2.2500	12	2.1959
$2\frac{3}{4}$	2.7500	4	2.5876	$2\frac{1}{2}$	2.5000	12	2.4459
3	3.0000	4	2.8376	$2\frac{3}{4}$	2.7500	12	2.6959
3	3.0000	$3\frac{1}{2}$	2.8144	3	3.0000	10	2.9350

Micrometer Sets



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We are in a position to make up any sets of one to three in micrometers, desired by our customers, in velvet-lined leather cas

We carry in stock two sizes of cases, one to hold any one, two, a three inch micrometer calipers; the other to hold the three micro eter calipers and a No. 31 or 31 R micrometer depth gauge.

Any of our micrometers will fit these cases, so that each user c select exactly the assortment that he prefers.

No. 586. For one, two, and three inch micrometers.

Price of case only.....(YUNUF) $4.

No. 587. For one, two, and three inch micrometers a micrometer depth gauge.

Price of case only.....(YUNYG) $5.

Special cases can be made to order to contain other asso ments.

Counter Display Cabinet

With an initial stock order for Machinists' and Precision Tools we offer any dealer this attractive display cabinet. It is designed for counter use, having a base 28 inches long and 9⅞ inches wide. The height in front is 5½ inches and 9½ inches at the back.

The assortment on display is entirely optional, likewise the stock, which is conveniently located in the case reached through a door at the back.

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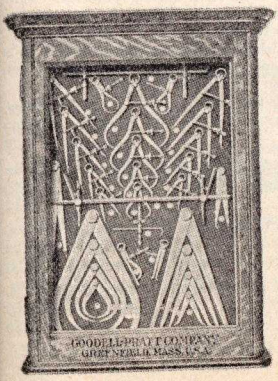
The cabinet is finely finished and is a high-grade fixture in every respect.

Ask our representative about this offer or write us for full particulars

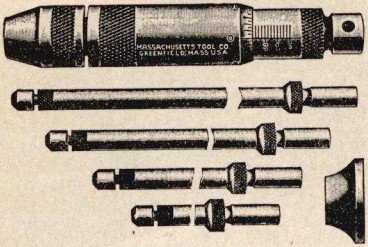


Display Panels and Cabinets

We are always glad to work with our dealers in making the most effective display of our line. Sampling panels (see pages 169 and 230) can be supplied to meet almost any requirement. A number of counter and wall cabinets are available on a very liberal basis. Write us for any information wanted.

Inside Micrometer Gauges

With One Inch Run



Patented May 8, 1894

These micrometer gauges possess a number of special features not found in other tools of this character. Particular attention is called to the fact that the screws of these tools, which have the same high degree of accuracy as in all our other micrometers, have a full one inch run, which greatly facilitates their use on large work.

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The correctness of the measuring capacity of these tools, and the distance from one anvil to the other, are governed by the ring on the measuring rod which comes to a positive seat against the end of the chuck. This does away with the possibility of dirt collecting inside the chuck and preventing the rods from seating properly. Wear of the rods can be compensated for by loosening the binding nut and adjusting the hardened steel anvil in the end of the rod.

These micrometers are furnished with various assortments of rods for measuring different lengths and each one has a small ring in which the micrometer may be set when used as a height gauge.

No. 10. For measurements by 1/1000 inch from 3 to 7 inches.

Price, each.....(WYJEK) $9.60
Price of leather case.....(WYJIL) 1.70

No. 17. For measurements by 1/1000 inch from 3 to 10 inches.

Price, each.....(WYSUX) $11.75
Price of leather case.....(WYSWO) 2.15

No. 18. For measurements by 1/1000 inch from 10 to 18 inches.

Price, each.....(WYTOY) $13.00
Price of leather case.....(WYTUZ) 2.75

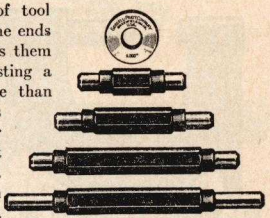
No. 19. For measurements by 1/1000 inch from 3 to 18 inches.

Price, each.....(WYTYO) $20.00
Price of leather case.....(WYTUZ) 2.75

Special combinations of any length furnished to order.

Standards

No. 563



These standards are made of tool steel, hardened and ground. The ends are lapped parallel, which makes them easier to use in setting or testing a micrometer, and more accurate than when lapped spherical. The rods are provided with hard rubber holders in order that they may not be affected by the heat of the hand. These holders are octagon in shape so that they will not roll.

One inch and 25 mm. standards are round discs, all other sizes are $\frac{5}{16}$ inch rods with rubber holders.

English			Metric		
1-inch disc	(YUJUZ)	$1.50	25 mm. disc	(YUKIX)	$1.50
2-inch rod	(YUJVE)	2.10	50 mm. rod	(YUKOZ)	2.10
3-inch rod	(YUJYO)	2.30	75 mm. rod	(YUKUB)	2.30
4-inch rod	(YUKAV)	2.50	100 mm. rod	(YUKVA)	2.50
5-inch rod	(YUKCY)	2.90	125 mm. rod	(YUKWE)	2.90
6-inch rod	(YUKEP)	3.35	150 mm. rod	(YUKYR)	3.35

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Each standard packed in a carton.

Micrometer Head

No. 38

Range 0 to 1" by Thousandths of an Inch

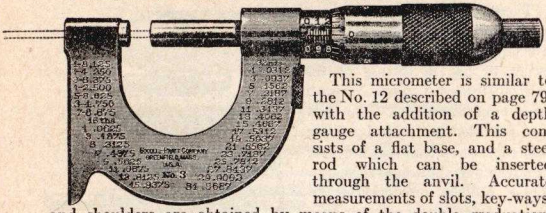
For use on special gauges, fixtures and machines where close measurements are required. They afford an easy means of securing precision measurements and adjustments. The spindle and lead screw, barrel and thimble are the same carefully made and tested parts as used in our regular micrometers. Graduated to read by 1/1000 inch from 0 to 1 inch.

Price, each..... (YADAB) $5.00

No. 3 Micrometer Caliper

Range 0 to 1" With Depth Gauge Attachment

Patented February 20, 1894



This micrometer is similar to the No. 12 described on page 79, with the addition of a depth gauge attachment. This consists of a flat base, and a steel rod which can be inserted through the anvil. Accurate measurements of slots, key-ways, and shoulders are obtained by means of the double graduation. When the rod is used, read the lower row of figures on the barrel and the outer row on the thimble.

Price, each.....(WYEGH) $13.00

Price of leather case.....(WYDDA) 1.25

Metric

No. 3 M. For measurements by 1/100 mm. from 0 to 25 mm.

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Price, each.....(WYELM) $13.00

No. 3 R Micrometer Caliper

Range 0 to 1" With Depth Gauge Attachment and Ratchet Stop

Similar to No. 3 above with the addition of a ratchet mechanism on the thimble in a position where it is easily reached by the fingers of the operator. The ratchet, by always applying an equal amount of pressure, enables more uniform and accurate measurements to be taken. The end of the thimble is provided with a speeder by means of which the screw can be rapidly run back and forth.

Price, each.....(WYEJK) $13.50

Price of leather case.....(WYDDA) 1.25

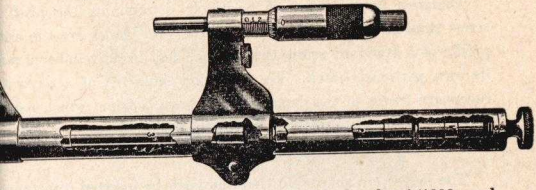
Metric

No. 3 MR. For measurements by 1/100 mm. from 0 to 25 mm.

Price, each.....(WYEMN) $13.50

No. 6 Beam Micrometer Caliper

Range 0 to 6″ by Thousandths of an Inch



This micrometer measures from 0 to 6 inches by 1/1000, and diameters up to 2¾ inches. Three standard plugs—one, two and three inch—are placed in the tubular beam of the frame, which is slotted to allow a key fastened to the traveling head to come in contact with the ends of the standards. This enables setting the traveler, which carries the micrometer head, at any even inch from 0 to 6. The standards not in use are placed to the right of the key, as illustrated. The test screw at the extreme right is turned down tight so that the 0 mark on it and the frame coincide.

The micrometer head, anvil and locking device are exactly the same as in our other micrometers.

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Price, each..... (WYGKO) $45.90
Price of leather case..... (WYGUL) 4.00

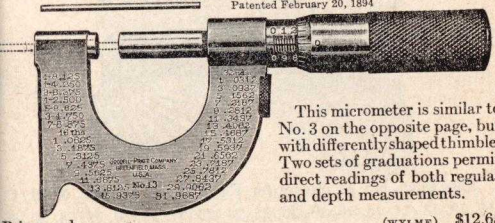
Metric

No. 6 M. For all measurements from 0 to 15 cm.
Price, each..... (WYGOK) $45.90

No. 13 Micrometer Caliper

Range 0 to 1″ With Depth Gauge Attachment

Patented February 20, 1894



This micrometer is similar to No. 3 on the opposite page, but with differently shaped thimble. Two sets of graduations permit direct readings of both regular and depth measurements.

Price, each..... (WYLME) $12.65
Price of leather case..... (WYDDA) 1.25

Metric

No. 13 M. For measurements by 1/100 mm. from 0 to 25 mm.
Price, each..... (WYLOF) $12.65

Screw Pitch Gauges

Designed for quickly and positively determining the pitch of screw threads. The teeth milled on the thin blades are the exact profile of a standard screw thread, each leaf being numbered with its own particular pitch. To determine the pitch of a screw try successive leaves of the gauge until the one is found which meshes perfectly with the thread. The pitch can then be read directly from the leaf.

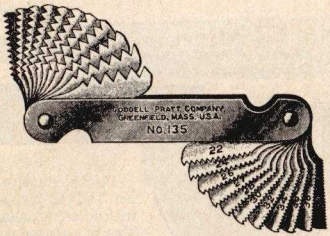
The leaves are shaped so that they can be inserted into tapped holes for gauging internal threads as well as external. The leaves not in use can be folded into the handle.

The gauges on this and the following pages are for V-threads, U. S. Standard threads, Metric, International and Whitworth Standard threads.

PAGE 102

No. 135 Screw Pitch Gauge

V-Threads—22 Pitches



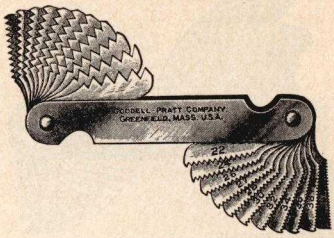
This gauge has 22 pitches for V-threads, as follows: 9, 10, 11, 11½, 12, 13, 14, 15, 16, 18, 20, 22, 24, 26, 27, 28, 30, 32, 34, 36, 38, 40. Length of leaves, 1 inch.

Price, each..... (YECUD) $1.10

Packed one in a box, 12 or 100 boxes in a carton.

No. 437 Screw Pitch Gauge

V-Threads—24 Pitches



This gauge has 24 pitches for V-threads, as follows: 4, 4½, 5, 5½, 6, 7, 8, 9, 10, 11, 11½, 12, 13, 14, 15, 16, 18, 20, 22, 24, 26, 27, 28, 30. Length of leaves, 1⅛ inches.

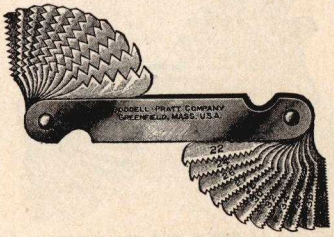
Price, each..... (YOLYX) $1.40

Packed one in a box, 12 or 100 boxes in a carton.

PAGE 103

No. 436 Screw Pitch Gauge

V-Threads—30 Pitches



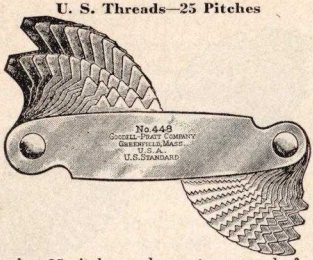
This gauge has 30 pitches for V-threads, as follows: 4, 4½, 5, 5½, 6, 7, 8, 9, 10, 11, 11½, 12, 13, 14, 15, 16, 18, 20, 22, 24, 26, 27, 28, 30, 32, 34, 36, 38, 40, 42. Length of leaves, 1⅛ inches.

Price, each..... (YOLVO) $1.60

Packed one in a box, 12 or 100 boxes in a carton.

No. 448 U. S. S. Screw Pitch Gauge

U. S. Threads—25 Pitches



This gauge has 25 pitches and a center gauge leaf. The pitches are for United States Standard threads, as follows: $2\frac{1}{4}$, $2\frac{3}{8}$, $2\frac{1}{2}$, $2\frac{3}{8}$, $2\frac{3}{4}$, $2\frac{7}{8}$, 3, $3\frac{1}{4}$, $3\frac{1}{2}$, 4, $4\frac{1}{2}$, 5, $5\frac{1}{2}$, 6, 7, 8, 9, 10, 11, 12, 13, 14, 16, 18, 20. Length of leaves, $1\frac{1}{2}$ inches.

Price, each..... (YONTA) $1.75

PAGE 104 Packed one in a box, 12 or 50 boxes in a carton.

International Screw Pitch Gauge

No. 446

17 Pitches

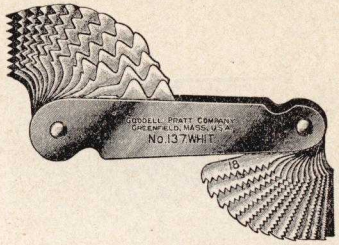
This gauge has 17 pitches and one center gauge leaf. The pitches, which are for the French International System, show both the pitch and the diameter of bolt. Pitches are as follows: .5, .75, 1, 1.25, 1.5, 1.75, 2, 2.5, 3, 3.5, 4, 4.5, 5, 5.5, 6, 6.5, 7 mm. Length of leaves, $1\frac{1}{2}$ inches.

Price, each..... (YONEV) $1.15

Packed one in a box, 12 or 50 boxes in a carton.

No. 137 Whitworth Screw Pitch Gauge

26 Pitches



This gauge is larger than those previously shown; it has 26 pitches made on 55° Whitworth angles, as follows: 4, 4½, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 16, 18, 19, 20, 22, 24, 25, 26, 28, 30, 32, 40, 48, 60. Length of leaves, 1⅛ inches.

Price, each ..... (YEDAZ) $1.40

Packed one in a box, 12 or 100 boxes in a carton.

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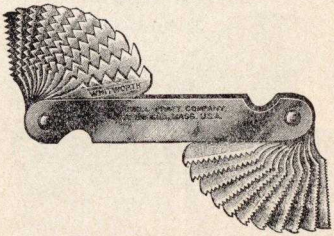
No. 138 Whitworth Screw Pitch Gauge

22 Pitches



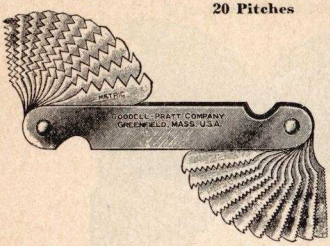
This gauge is the same size as those shown on page 103, but has 22 pitches made on 55° Whitworth angles, as follows: 7, 8, 9, 10, 11, 12, 13, 14, 16, 18, 19, 20, 22, 24, 25, 26, 28, 30, 32, 40, 48, 60. Length of leaves, 1 inch.

Price, each ..... (YEDBE) $1.10

Packed one in a box, 12 or 100 boxes in a carton.

No. 136 Metric Screw Pitch Gauge

20 Pitches



This gauge has 20 pitches, and instead of giving the number of threads to the inch, it gives the distance from center to center of teeth in millimeters. The leaves are as follows: .50, .60, .70, .75, .80, .90, 1.00, 1.10, 1.20, 1.25, 1.30, 1.40, 1.50, 1.60, 1.70, 1.75, 1.80, 1.90, 2 00, 2.50 mm. Length of leaves, 1 inch.

Price, each..... (YECZE) $1.10

Packed one in a box, 12 or 100 boxes in a carton.

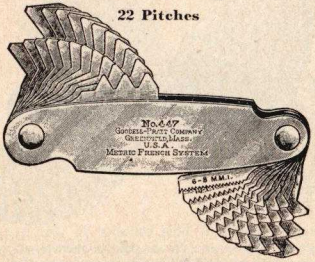
No. 698 Metric Screw Pitch Gauge

Same as No. 136 above, but with 28 pitches as follows: .25, .30, .35, .40, .45, .50, .55, .60, .65, .70, .75, .80, .85, .90, 1.00, 1.10, 1.20, 1.25, 1.30, 1.40, 1.50, 1.60, 1.70, 1.75, 1.80, 1.90, 2.00, 2.50 mm. Length of leaves, 1 inch.

PAGE 106 Price, each..... (ZANGY) $1.25

No. 447 Metric French System Screw Pitch Gauge

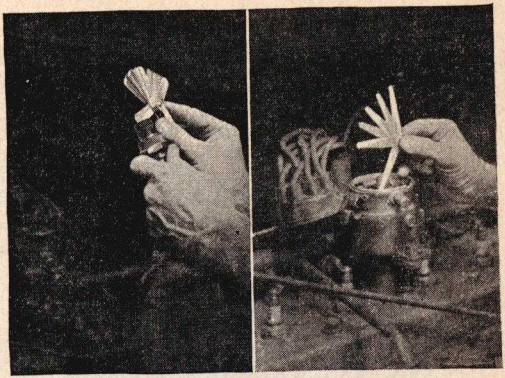
22 Pitches



This gauge has 22 pitches of the Metric French System, as follows: 1, 1.5, 2, 2.5, 3, 3.5, 4, 4.5, 5, 5.5, 6, 6.5, 7, 7.5, 8, 8.5, 9, 9.5, 10, 10.5, 11, 11.5 mm. Length of leaves, 1½ inches.

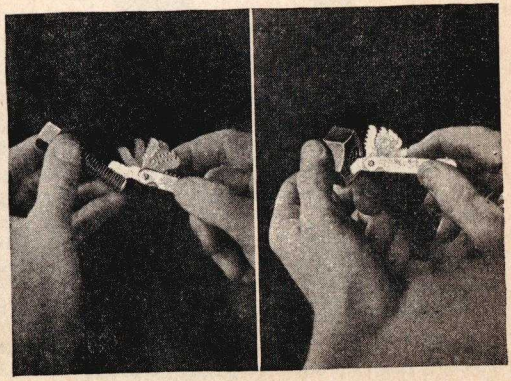
Price, each..... (YONOY) $1.60

Packed one in a box, 12 or 50 boxes in a carton.



Thickness or Feeler Gauges are an indispensable tool in the kit of the automotive mechanic, as well as the toolmaker

PAGE 107



The pitch of outside and inside screw threads are quickly and positively determined with a Screw Pitch Gauge

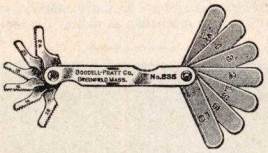
Thickness or Feeler Gauges

The leaves of Goodell-Pratt thickness or feeler gauges are made of the best grade of tempered steel procurable for the purpose. Each leaf is clearly etched with its thickness and every leaf is guaranteed accurate within very close limits. They are precision tools in every sense of the word. Leaves and cases have a finely polished finish.

Thickness gauges are indispensable to the tool maker and die maker in making jigs, dies, and fixtures. They are used extensively in automotive work for setting valve tappets, gauging piston clearances, setting spark plug gaps, setting distributor points, shimming, etc.

No. 835 Automotive Gauge

PAGE 108



A very useful combination of feeler and screw pitch gauge, designed more particularly for automotive use. One end contains seven feeler leaves, .0015, .002, .003, .004, .005, .010, and .015 thick, giving a range of most thicknesses by half-thousandths from .0015 to .0405 (except .0025).

The other end has six S. A. E. screw pitches, $\frac{1}{4}$-28, $\frac{5}{16}$-24, $\frac{3}{8}$-24, $\frac{7}{16}$-20, $\frac{1}{2}$-20, $\frac{9}{16}$-18, $\frac{5}{8}$-18, $\frac{7}{8}$-14, 1-14, covering all threads on the ordinary automobile.

Length closed, $3\frac{7}{8}$ inches. Weight, $1\frac{1}{2}$ ounces.

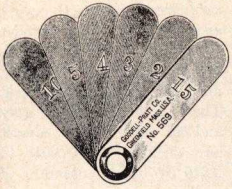
Price, each ..... (ZELJO) $1.50

Price of 10 gauges mounted on a display, each in an individual cellophane envelope ..... (ZELJY) 15.00

Thickness or Feeler Gauge

No. 569

6 Leaves 2¼ Inches Long



This gauge is particularly adapted to the needs of the motor car owner and mechanic for use in setting valve tappets, timers, spark plug points, gauging shims, clearances, etc. It has six leaves, .002, .003, .004, .005, .010, and .015 inch thick, making possible in combination all thicknesses by thousandths from .002 to .039 (except .038).

The leaves are ½ inch wide. There is no case or sides for this gauge; the leaves not in use forming the handle. Leaves, 2¼ inches long.

Price, each ..... (YULWA) $0.50

Packed ten in a carton.

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Thickness Gauge Display

No. 569

This display consists of a very attractive counter card, with substantial easel, printed in red and black on stiff white stock. To it are metal stitched fourteen No. 569 feeler gauges illustrated and described above. A fifteenth gauge is fanned out, showing the six different leaves.

Given a chance to demonstrate its worth, this display has proven itself an unusually efficient salesman.

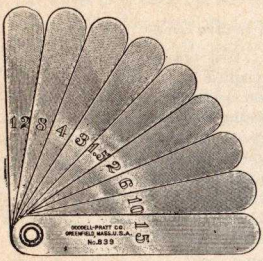
Height, 11½ inches. Width, 6½ inches.

Display, complete, with 15 gauges mounted..... (YULXO) $7.70

Packed one in an envelope. Weight, 6 ounces.

No. 839 Thickness Gauge

9 Leaves 3 1/16 Inches Long



The nine leaves of this thickness gauge include all the most used sizes in automotive work and represent a very popular assortment as follows: .0015, .002, .003, .004, .006, .008, .010, .012, and .015 inch thick. These make possible singly and in combination almost any thickness from .0015 to .0615 by half thousandths of an inch.

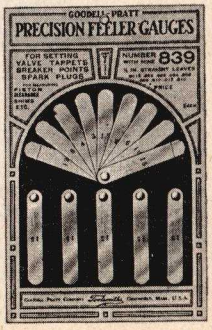
Length of leaves, $3\frac{1}{16}$ inches. Width, $\frac{1}{2}$ inch.

Price, each..... (ZEMAD) $0.70

PAGE 110 Packed ten in carton, $3\frac{3}{8}$ x $1\frac{3}{4}$ x $\frac{3}{4}$ inches.
Weight, 4 ounces.

No. 839 Thickness Gauge Displays

Two very neat and effective counter displays of the No. 839 gauge illustrated and described above are offered, one holding six and the other fifteen gauges.



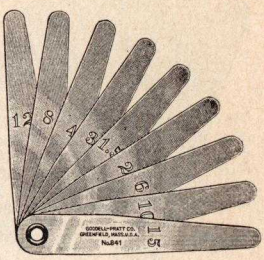
These displays fitted with substantial easels, show the gauges to advantage and when well placed originate many sales. The six-gauge display is illustrated herewith while the fifteen-gauge display is similar to that for the No. 841 shown on the page opposite.

No. 839. Display complete with 6 gauges..... (ZEMAT) $4.20
No. 839. Display complete with 15 gauges..... (ZEMAX) 10.50

Packed one display in an envelope.

No. 841 Thickness Gauge

9 Tapered Leaves 3 1/16 Inches Long



The leaves of this gauge are made of the finest grade of special thickness gauge steel. They are nicely tapered for use in small spaces and the thickness of each is clearly etched on it. Great care is taken in finishing the ends to remove any burr so that they are accurate and sensitive.

It has 9 leaves of the following thicknesses: .0015, .002, .003, .004, .006, .008, .010, .012, and .015 inch. These make possible singly and in combination almost any thickness by half-thousandths from .0015 to .0615.

Length of leaves, $3\frac{1}{16}$ inches.

Price, each..... (ZEMEF) $0.75

Packed ten in a carton, $3\frac{3}{8}$ x $1\frac{3}{4}$ x $\frac{3}{4}$ inches.
Weight, 4 ounces.

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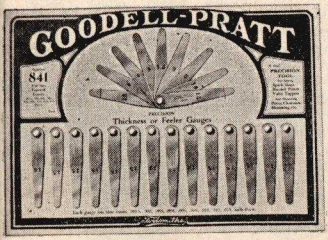
No. 841 Thickness Gauge Displays



The No. 841 thickness gauge illustrated and described above is offered on two attractive counter displays that sell many gauges when effectively placed. They are equipped with substantial easels and can be used on the counter, in the window or hung up.

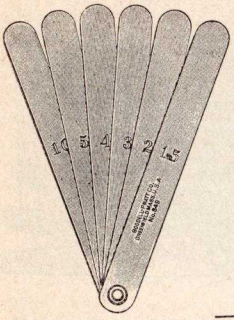
The display carrying fifteen gauges is illustrated herewith, while the display of six is similar to the No. 839 Display shown on the opposite page.

No. 841. Display complete with 6 gauges..... (ZEMEL) $4.50
No. 841. Display complete with 15 gauges..... (ZEMEO) 11.25

Packed one display in an envelope.

No. 849 Thickness Gauge

6 Leaves 4⅝ Inches Long



The long leaves of this gauge, their assortment and the very low price at which it is sold, make this a very popular number. It has six leaves as follows: .002, .003, .004, .005, .010 and .015 inch thick. These make possible, singly or in combination, almost any thickness from .002 to .039 inch by thousandths of an inch.

Length of leaves, 4⅝ inches. Width, ½ inch.

Each gauge is packed in a metal bound leather pocket.

Price, each..... (ZENAF) $0.85

Packed ten in a carton.

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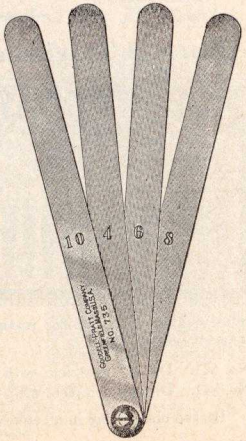
No. 735 Thickness Gauge

4 Leaves 6 Inches Long



This gauge is especially designed for garages and service stations for measuring piston clearances in addition to the other uses for a gauge of this sort. The extra long leaves make it possible to accurately gauge piston clearances in any part of the cylinder. There are four leaves, .004, .006, .008, and .010 inch thick, giving a number of thicknesses singly or in combination.

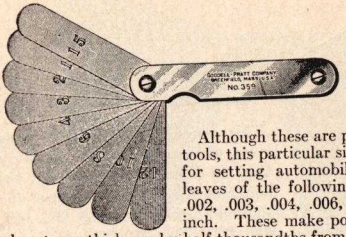
Leaves are 6 inches long by ½ inch wide. They are held together by a screw and nut, which are readily removable for inserting or replacing new leaves. There is no case or sides to this gauge, the leaves not in use forming the handle. Each gauge furnished in a metal bound leather pocket.

Price, each..... (ZAURJ) $1.10

Packed one in a carton.

No. 359 Thickness or Feeler Gauge

9 Leaves 2¼ Inches Long



Although these are primarily tool makers' tools, this particular size is now widely used for setting automobile valves. It has 9 leaves of the following thicknesses: .0015, .002, .003, .004, .006, .008, .010, .012, .015 inch. These make possible in combination almost any thickness by half-thousandths from .0015 to .0615.

Length of leaf, 2¼ inches. Width of leaf, ½ inch. Length over all, 2¾ inches.

Price, each.....(YIZOF) $1.35

Packed one in a box, 12 or 50 boxes in a carton.

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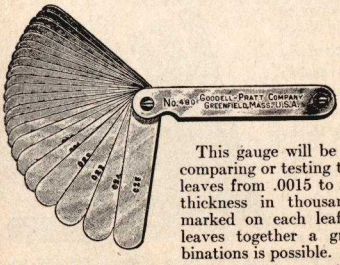
No. 480 Thickness or Feeler Gauge

25 Leaves 2¼ Inches Long



This gauge will be found very useful for comparing or testing thicknesses. It has 25 leaves from .0015 to .025 inch thick. The thickness in thousandths of an inch is marked on each leaf. By using different leaves together a great variety of combinations is possible.

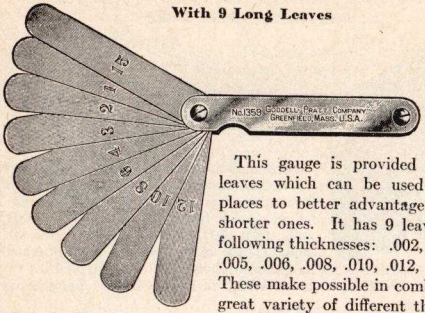
Length of leaf, 2¼ inches. Width of leaf, ½ inch. Length over all, 2¾ inches.

Price, each.....(YOSDO) $2.50

Packed one in a box, 12 or 50 boxes in a carton.

No. 1359 Thickness or Feeler Gauge

With 9 Long Leaves



This gauge is provided with long leaves which can be used in many places to better advantage than the shorter ones. It has 9 leaves of the following thicknesses: .002, .003, .004, .005, .006, .008, .010, .012, .015 inch. These make possible in combination a great variety of different thicknesses. Length of leaf, $4\frac{5}{8}$ inches. Width of leaf, $\frac{1}{2}$ inch. Length over all, $5\frac{1}{8}$ inches.

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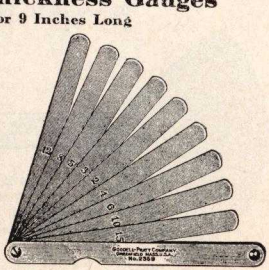
Price, each ..... (ZIVOV) $2.15

Packed one in a box, 12 or 50 boxes in a carton.

Long Leaf Thickness Gauges

9 Leaves 6 or 9 Inches Long



These gauges are similar to those preceding but with longer leaves. They are particularly useful for measuring piston clearances in cylinders, the air gap of motors, etc. They have 9 leaves of the following thicknesses: .002, .003, .004, .005, .006, .008, .010, .012 and .015 inch.

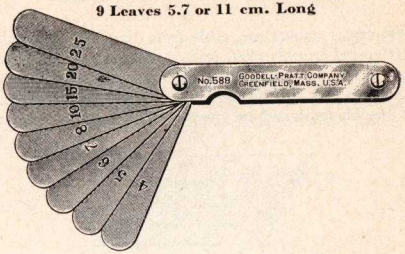
Used singly or in combination they give almost all measurements by thousandths of an inch from .002 to .065. Width of leaf, $\frac{1}{2}$ inch.

		Price, Each
No. 2359. Length of leaves, 6 inches	(ZUGIP)	**$3.00**
No. 3359. Length of leaves, 9 inches	(ZUGMA)	3.25

Packed one in a box, 12 in a carton.

Metric Thickness Gauges

9 Leaves 5.7 or 11 cm. Long



These gauges have 9 tempered leaves of the following thicknesses: .04, .05, .06, .07, .08, .10, .15, .20, and .25 mm. By using the various leaves singly and in combination a great number of different thicknesses are obtained from .04 to 1.00 mm. Leaves, 13 mm. wide.

		Price, Each
No. 588.	Length of leaves, 5.7 cm. (YUNZA)	$1.50
No. 1588.	Length of leaves, 11 cm. (ZOBJY)	2.15

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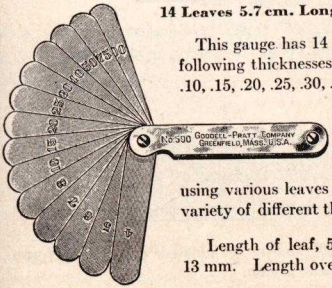
Packed one in a box, 12 or 100 boxes in a carton.

No. 590 Metric Thickness Gauge

14 Leaves 5.7 cm. Long



This gauge has 14 tempered leaves of the following thicknesses: .04, .05, .06, .07, .08, .10, .15, .20, .25, .30, .40, .50, .75, 1 mm. By using various leaves in combination a great variety of different thicknesses is obtainable.

Length of leaf, 57 mm. Width of leaf, 13 mm. Length over all, 7 cm.

Price, each..... (YUOFT) $2.50

Packed one in a box, 12 or 100 boxes in a carton.

Tempered Center Gauges

These center gauges are made from the very best quality of spring tempered crucible steel, graduated on our perfected dividing engines. They are accurately ground on all faces, and are lapped in the notches to a light tight fit with a standard. They have the highest possible finish and are guaranteed accurate.

No. 40. 60° angles. Graduated one corner each in 32ds, 24ths, 20ths, and 14ths. Thickness, $\frac{1}{10}$ inch.

Price, each..... (YADEV) **$0.55**

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No. 41. Whitworth. 55° angles. Graduated one corner each in 32ds, 24ths, 20ths, and 14ths. Thickness, $\frac{1}{10}$ inch.

Price, each..... (YADTA) **$0.55**

No. 42. Metric. 60° angles. Graduated one corner $\frac{1}{2}$ mm., 3 corners mm. Thickness, .8 mm.

Price, each.. ..... (YADVE) **$0.55**

Packed one half dozen in a carton.

Tempered Center Gauges

These center gauges are made from the very best quality of spring tempered crucible steel, graduated on our perfected dividing engines. They are accurately ground on all faces, and are lapped in the notches to a light tight fit with a standard. They have the highest possible finish and are guaranteed accurate.

No. 438. 60° angles. Graduated one corner each in 32ds, 24ths, 20ths, and 14ths. Thickness, $\frac{1}{16}$ inch.

Price, each.....(YOMAS) $0.55

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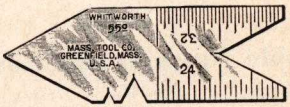

No. 439. Whitworth. 55° angles. Graduated one corner each in 32ds, 24ths, 20ths, and 14ths. Thickness, $\frac{1}{16}$ inch.

Price, each.....(YOMET) $0.55

No. 440. Metric. 60° angles. Graduated one corner $\frac{1}{2}$ mm., 3 corners mm. Thickness, .8 mm.

Price, each.....(YOMIV) $0.55

Packed one half dozen in a carton.

Adjustable Notch Center Gauge 60°

No. 44

(Tempered)

These center gauges are made of tempered crucible steel, and all angles are accurately ground. The notch, being made of separate pieces, insures a perfect angle to the extreme point. By tightening thumbscrew the sliding blade is held firmly in any position desired. It is the only center gauge that will fit any size inside threading tool. The sliding blade, together with the size of the tool, makes it very useful in many other ways. Graduated one corner each in 32ds, 24ths, 20ths, and 14ths.

Price, each..... (YAECT) $1.25

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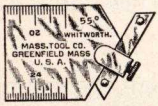
Packed one half dozen in a carton.

Adjustable Notch Center Gauge 55°

No. 45

(Tempered)



Same as the No. 44 above except that the angles are 55 degrees for the Whitworth English Standard.

Some of the uses to which this versatile little gauge can be put are illustrated on the opposite page.

Graduated one corner each in 32ds, 24ths, 20ths, and 14ths.

Price, each..... (YAELD) $1.25

Packed one half dozen in a carton.

Adjustable Notch Center Gauge 60°

No. 46

(Tempered)

This gauge is exactly the same as No. 44 on the page opposite but with the four corners graduated in Metric as follows: one corner in ½ millimeters and the other three corners in millimeters.

Angles are 60 degrees.

Price, each..... (YAENG) $1.25

Packed one half dozen in a carton.

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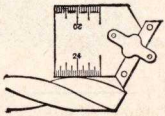
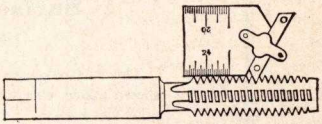
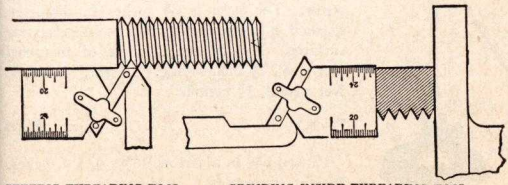


GRINDING TWIST DRILLS

TESTING ANGLES

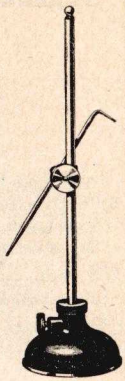


TESTING ANGLES OF THREAD



SETTING THREADING TOOL GRINDING INSIDE THREADING TOOL

Surface Gauge
No. 115



This is a very useful and efficient surface gauge. The base is solid and stands square on the work. The spindle has a fine adjustment operated by turning the knurled headed nut on top of the base; after setting, this can be locked firmly by means of the tightening screw shown in the illustration. The scriber is made of carefully tempered tool steel, 4 inches long.

The base is 2½ inches in diameter, finished in black enamel, with polished bearing surfaces. Height, 9 inches. Net weight, 1 pound.

Price, each.....(YEADZ) $3.35

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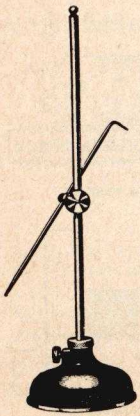
Packed one in a carton, 10¼ x 3¼ x 3 inches. Weight, 1⅛ pounds.



Surface Gauge
No. 116

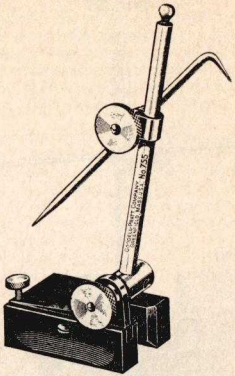
This surface gauge is similar to the No. 115 shown above, except that it is larger and has a heavier base.

The gauge has a fine adjustment of the spindle and can be locked by the tightening screw. The base is 3½ inches in diameter, finished in black enamel, with polished bearing surfaces. The scriber is made of tempered tool steel, 7½ inches long. Height, 12 inches. Net weight, 1¾ pounds.

Price, each.....(YEAJF) $4.60

Packed one in a carton, 13½ x 4¼ x 4 inches. Weight, 2⅛ pounds.

Surface Gauges



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These surfaces gauges, although very moderately priced, are very well made and finished and embody many very desirable features.

They are offered in two lengths of spindle and are equipped with 5-inch scriber and a hardened steel base measuring $2\frac{1}{4}$ x $1\frac{1}{2}$ x $\frac{3}{4}$ inch.

The base is carefully ground for work on a surface plate and also grooved for use on cylindrical surfaces. Corrugated finger grips are milled in the sides. The base front is slotted so that the spindle can be turned down and the tool used as a depth gauge. Also by loosening the thumb screw of the binder head the spindle can be dropped down through the slot and the marker on its end used as a scratch gauge.

The scriber head has a spring control which holds both scriber and head at any desired point while the thumb nut is being tightened. This feature, with the fine adjustment provided in the base, allows very quick, accurate settings.

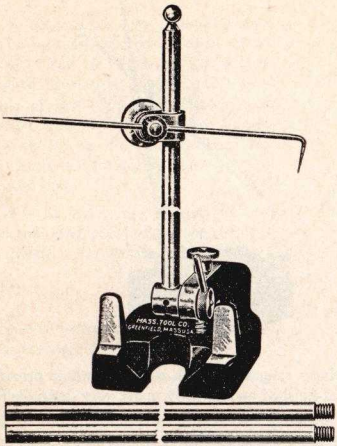
Heights, $5\frac{7}{8}$ inches and $9\frac{7}{8}$ inches. Weights, 11 and 12 ounces.

No. 755 with 5-inch spindle ..... (ZAYLE) $3.50
No. 889 with 9-inch spindle ..... (ZEYGD) 4.00

Packed one in a carton.

Surface Gauge

No. 57



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This large surface gauge with a solid base is one of the best ever offered to mechanics for large work or heavy duty, both on account of its range and its practical uses.

The spindle has a movement of 180 degrees, with a fine adjustment. After tightening the slide on the spindle, close adjustment is made by turning the knurled head nut on the screw through the supporting arm.

The tool can also be used as a depth gauge. By removing the spindle and inserting the scriber in the clamping stud it makes a satisfactory scratch gauge.

The angle milled on top of the base is of great convenience in working against a surface plate or planer bed. The base is 4 x 5 inches, all finished in black enamel except the bearing surfaces, which are polished.

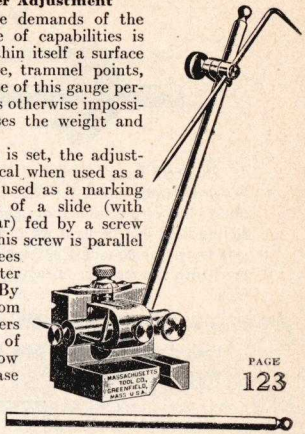
Three 12-inch jointed standards, that can be screwed together for large work, are furnished with each tool. Net weight, $6\frac{1}{2}$ pounds.

Price, each ..... (YAHEZ) **$14.60**

Packed one in a carton, $13\frac{1}{2}$ x $4\frac{3}{4}$ x 4 inches. Weight, 7 pounds.

No. 55 Universal Surface Gauge

With Micrometer Adjustment



Designed especially to meet the demands of the most critical mechanics, its range of capabilities is almost limitless. It is at once within itself a surface gauge, depth gauge, marking gauge, trammel points, set or height gauge. The small base of this gauge permits accurate work at close quarters otherwise impossible and at the same time decreases the weight and space occupied.

At whatever angle the standard is set, the adjustment of the scriber is always vertical when used as a surface gauge, or horizontal when used as a marking gauge. Adjustment is by means of a slide (with compensating take-up for any wear) fed by a screw graduated to read to .001 inch. This screw is parallel with one base face and at 90 degrees with the other, making a micrometer surface, depth, or height gauge. By removing the standard and spindle from the base, and using the two scribers with them, a most convenient set of trammel points is arranged. For low work remove the standard from base and use scriber in slide spindle. Has V-slot in one base for cylindrical work. Extra length standards (jointed for folding) can be furnished at small cost, so that circles of almost any diameter may be described to a nicety by means of the micrometer adjustment. Furnished as shown above, with two standards, 5 inches and 10 inches long, and two scribers. Net weight, $2\frac{1}{8}$ pounds.

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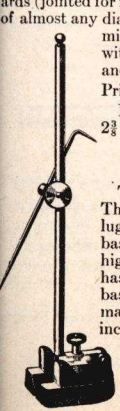
Price, each ..... (YAGUC) $11.00

Packed one in a carton, $10\frac{3}{4}$ x 3 x $2\frac{1}{2}$ inches. Weight, $2\frac{3}{8}$ pounds.

No. 56 Surface Gauge



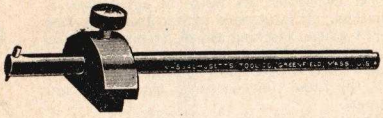
This gauge is simple in construction, but accurate. The face of the base and the angles formed by the two lugs in front are milled and finished. The rest of the base is finished in black enamel. The standard is highly polished steel, and the scriber best drill rod. It has a fine adjustment by means of the knurled nut and base screw. It can be used as a depth gauge and, for many cases, makes a useful scratch gauge. Spindle is 8 inches long. Net weight, $\frac{3}{4}$ pound.

Price, each ..... (YAGYE) $2.75

Packed one in a carton, $10\frac{3}{4}$ x 3 x $2\frac{1}{2}$ inches. Weight, 1 pound.

Tool Makers' Precision Scratch Gauge

No. 60



This tool has a marker of the best quality tool steel. It is a beveled scratch point, the only shape that can satisfactorily do the finest class of precision work, and be kept always at a point. The sliding head can be used with either side towards the point. One side has an angle milled in its edge so that it can be kept on a line level with the marker. Length of rod, 5 inches. Width of base, 1 inch.

Price, each..... (YAIBT) $1.50

Packed one in a carton, $5\frac{3}{4}$ x $1\frac{3}{8}$ x $1\frac{1}{8}$ inches.

PAGE 124 Weight, 2 ounces.

Scratch Gauge

No. 228

This tool has a beam nearly 7 inches long, graduated 6 inches of its length. The traveling head is split so that it can be tightened in any desired position, without marring the graduations, by turning the binding ring. Beam is polished and nickel plated; other parts, white nickeled. The marker is a formed cutter, the face of which can be ground and the cutter always kept sharp.

Price, each..... (YEVAR) $1.85

Packed one in a carton, $7\frac{3}{8}$ x $1\frac{3}{4}$ x $1\frac{1}{4}$ inches.

Weight, 6 ounces.

Single Point Scriber
No. 58
Length 4½ Inches

This scriber is made of a fine grade of round steel with a beautifully tapered point that is carefully tempered, ground and polished. The body is finely knurled and $\frac{5}{32}$ inch in diameter.

Length, $4\frac{1}{2}$ inches.

Price, each..... (YAHOC) $0.25

Packed one quarter dozen in a carton, $5\frac{1}{4} \times \frac{3}{4} \times \frac{5}{8}$ inch.

Weight, $1\frac{1}{2}$ ounces.

Double Point Scriber
No. 61
Length 6½ Inches

The two points with which this scriber is equipped are made of a fine grade of steel. They are swaged to a long, even taper, carefully tempered, ground and polished. The body is made of ¼-inch round steel, finely knurled, making a comfortable handle with a sure grip. PAGE 125

Points can be removed from the body and replaced when desired.

Length, $6\frac{1}{2}$ inches.

Price, each..... (YAIGZ) $0.40

Packed one half dozen in a carton, $7 \times 1\frac{3}{8} \times \frac{5}{8}$ inch.

Double Point Scriber
No. 62
Length 9 Inches

Equipped with two points made of a fine grade of steel, carefully tempered, ground and polished. The body is a fine, knurled piece of steel ¼ inch in diameter and $2\frac{1}{2}$ inches long, making a good handle.

The points can be removed from the body and replaced when desired.

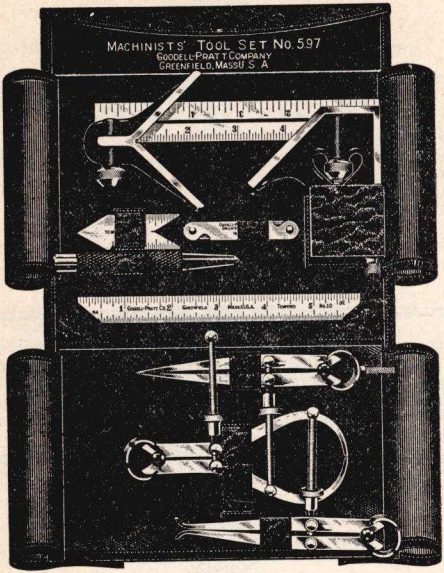
Length, 9 inches.

Price, each..... (YAIJA) $0.50

Packed one half dozen in a carton, $9\frac{3}{8} \times 1\frac{3}{8} \times \frac{5}{8}$ inch.

Weight, 6 ounces.

No. 597 Machinists' Tool Kit



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This is a small and compact set of machinists' tools put up in a genuine leather case, lined with canvas. All of the tools are of the finest quality.

The following tools are contained in this set:—

No. 135 Screw Pitch Gauge
No. 253 Semi-Flexible Steel Rule, 6 inch
No. 361 Combination Square
No. 438 Center Gauge
No. 502 Outside Spring Calipers, 4 inch
No. 508 Inside Spring Calipers, 4 inch
No. 514 Spring Dividers, 4 inch
No. 995 Center Punch

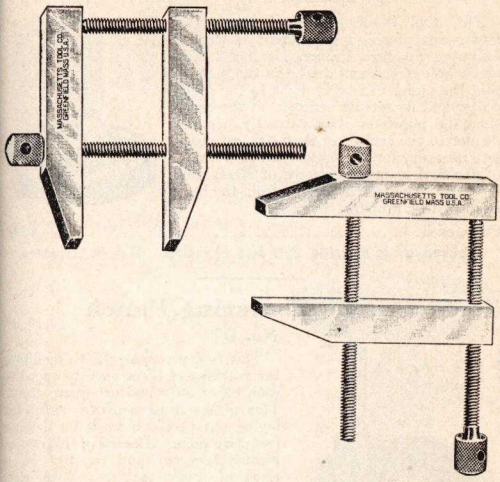
Size of case, 7½ x 4½ x 1½ inches. Net weight, 1½ pounds.

Price, each ..... (YUPID) $8.35

Each set packed in a separate carton.

This set can also be furnished with tools of metric graduation, or with Whitworth Center and Screw Pitch gauges, if so specified.

Precision Parallel Steel Clamps



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These clamps are designed for strength and rigidity. The shape of the jaws permits clamping under shoulders and close up on many irregular shapes.

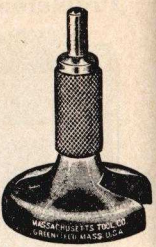
The larger sizes have pivot bearings to minimize frictional strain. The accurately cut screws have large knurled heads affording a good grip and are drilled for tightening bars.

	Length of Jaws	Opening		Price, Each
No. 91	1 inch	$\frac{5}{8}$ inch	(YAUSP)	$0.65
No. 92	$1\frac{1}{2}$ inches	1 inch	(YAYAM)	.75
No. 93	2 inches	$1\frac{1}{4}$ inches	(YAVIP)	.85
No. 94	$2\frac{1}{2}$ inches	$1\frac{3}{4}$ inches	(YAVNE)	1.00
No. 95	3 inches	2 inches	(YAVUR)	1.20
No. 96	4 inches	$2\frac{1}{2}$ inches	(YAWAN)	1.35

Packed one pair (2 clamps like illustration) in a carton.

Tool Makers' Punch

No. 65



This tool is of great convenience in laying out precision work, particularly in centering for fine drilling. It has a slot and a hole milled and drilled in the base so that the punch can be brought to the exact center and its setting verified; at the same time the punch is always exactly perpendicular to the surface of the work, an absolute necessity for the finest class of work.

The tool is made entirely of steel, well finished. The punch is made from the best quality steel, properly tempered.

Price, each ..... (YAJYG) $2.00

Packed one in a carton, $2\frac{1}{4}$ x $1\frac{1}{2}$ x $1\frac{1}{2}$ inches. Weight, 2 ounces.

Double Centering Punch

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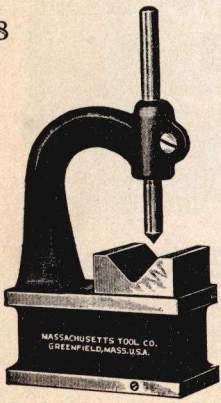
No. 97



This tool was designed to facilitate the marking of holes directly opposite each other on round or square stock. This makes it particularly useful for laying out precision work for drilling from two sides. The use of this device insures accuracy and rapidity on a class of work that has previously caused much bother and delay.

A hole is first made by the top punch, then the work is reversed and the bottom punch is placed in the hole previously made by the top punch, where it is held by a spring. If another hole is now made by the top punch, the two will come directly opposite each other.

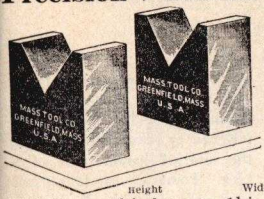
The V-block is removable when it is desired to use the punch on flat work.

This device will punch round stock up to 1 inch in diameter, and square stock, $1\frac{1}{4}$ inches thick, $1\frac{1}{4}$ inches from the edge.

Price, each ..... (YAWEP) $8.35

Packed one in a carton, $4\frac{1}{4}$ x 3 x $1\frac{1}{2}$ inches.
Weight, $1\frac{1}{2}$ pounds.

Precision V-Blocks or Bench Parallels



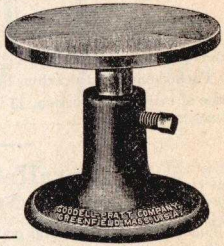
These blocks are very useful for machinists and tool makers, as they are almost a necessity in doing many classes of fine work. They are made of steel, case hardened and accurately ground in the angle, on the base, and one end.

	Height	Width		Per Pair
No. 100	$1\frac{1}{4}$ inches	$1\frac{1}{2}$ inches	(YAWTY)	$4.20
No. 101	2 inches	$2\frac{1}{2}$ inches	(YAWYT)	8.70

Packed one pair in a carton.

No. 195 Adjustable Bench Table

This device will be found very convenient on a machinist's workbench. Its height can be varied from $4\frac{1}{2}$ to $6\frac{1}{2}$ inches and it is 5 inches in diameter. It has a turned and polished top, practically true, although we do not pretend that it is equal to a surface plate.



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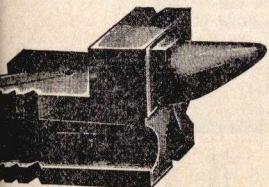
Price, each..... (YELJE) $2.30

Packed one in a carton, $7\frac{1}{4}$ x $7\frac{1}{4}$ x $3\frac{3}{4}$ inches. Weight, $3\frac{3}{4}$ pounds.

Universal Bench Anvils



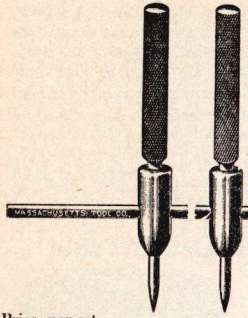
These anvils will be found very convenient and practical for use upon any tool maker's bench; they have planed and squared surfaces, milled grooves and slots; in fact, the faces of the tool are sufficiently accurate to admit of its being used as a surface plate for laying out small work.

No. 110. Size, $4\frac{3}{4}$ x $2\frac{1}{4}$ x $2\frac{1}{4}$ inches. Price, each..... (YAYVY) $3.70
Packed one in a carton. Weight, 2 pounds.

No. 111. Size, 6 x 3 x 3 inches. Price, each..... (YAZER) 5.50
Packed one in a carton. Weight, 5 pounds.

Extension Beam Trammels

No. 62



These trammels move freely on a steel beam that is flattened on one side. They are instantly fastened or released by rotating the knurled handle part of a turn. Points are carefully hardened and tempered. Each set is furnished with one beam 13 inches long.

Additional 13-inch beam sections with couplings may be procured at any time.

Price, per set ..... (YAILF) $1.70

Packed one set in a carton, 14½ x 1 x ⅞ inch. Weight, 6 ounces.

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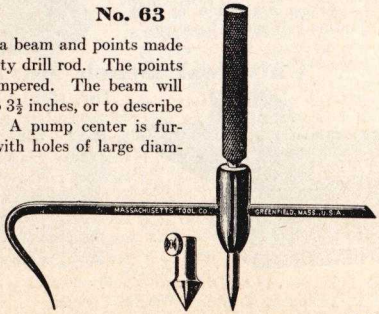
Price of extra beam section, 13-inch $0.45

Price, each coupling ..... .45

Parallel Dividers

No. 63

This tool has a beam and points made of the best quality drill rod. The points are carefully tempered. The beam will extend from 0 to 3½ inches, or to describe a 7-inch circle. A pump center is furnished for use with holes of large diameter.

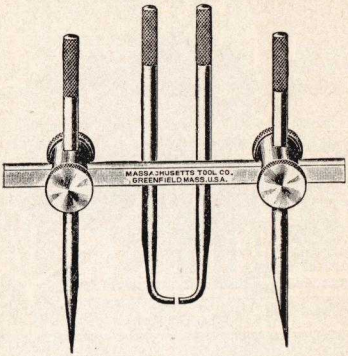


Price, each ..... (YAIRL) $1.70

Packed in a carton, 4¾ x 1⅛ x ⅞ inch. Weight, 3 ounces.

Precision Extension Steel Beam Trammels

No. 134



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This tool consists of a polished steel beam 16 inches long, flattened on one side, two movable clamping heads, and a pair of dividers made of the best quality cast steel with hardened points. A fine adjustment is secured by rotating the divider points, which are made slightly eccentric.

Each clamping head has two knurled-headed thumb screws The divider points pass through the heads and are held lightly by a friction spring or locked fast by turning the screw. The other screw fastens the head securely to the beam. This allows the clamping heads to be moved freely along the beam without interfering with the adjustment of the divider points, a valuable feature that is not found on any other similar tool.

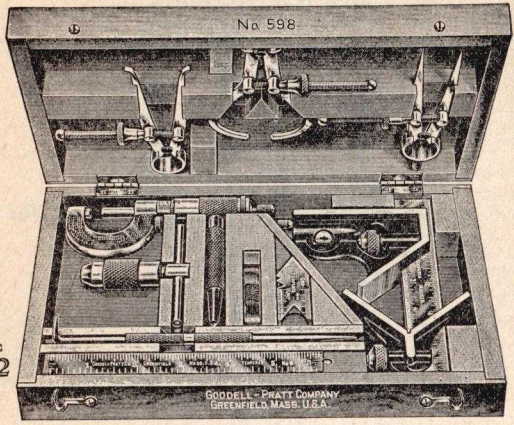
Please note that the caliper legs illustrated above are not regularly furnished with the tool, but may be obtained for a slight additional charge.

		Price
One Beam Section, with Divider Points	(YECOC)	$2.50

Packed in a carton, 16½ x 1¼ x 1 inch. Weight, ⅝ pound.

Extra Beams, 16 inch	$0.45
Couplings, each	.45
Caliper Points, per pair	.65

No. 598 Machinists' Tool Kit



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This is a very complete and convenient set of machinists' tools put up in a handsome hardwood case. All of the tools are of the very highest quality and finest grade.

The following tools are contained in this set:—

No. 2R	Ratchet Micrometer, 1 inch	No. 438	Center Gauge
No. 61	Double Point Scriber	No. 502	Outside Spring Calipers, 4 inch
No. 88	Tap Holder	No. 508	Inside Spring Calipers, 4 inch
No. 135	Screw Pitch Gauge	No. 514	Spring Dividers, 4 inch
No. 253	Semi-Flexible Steel Rule, 6 inch	No. 995	Center Punch
No. 361	Combination Square, 6 inch		

Size of case, $10\frac{3}{8}$ x $7\frac{1}{8}$ x 2 inches. Net weight, 3 pounds.

Price, each.....(YUPOF) $18.75

Each set packed in a separate carton.

This set can also be furnished with tools of Metric graduation, or with Whitworth Center and Screw Pitch gauges, if so specified.

No. 140 Precision Center Punches

9 Body Sizes

This set consists of nine center punches, $\frac{1}{4}$, $\frac{9}{32}$, $\frac{5}{16}$, $\frac{11}{32}$, $\frac{3}{8}$, $\frac{13}{32}$, $\frac{7}{16}$, $\frac{15}{32}$, and $\frac{1}{2}$ inch in diameter, put up in a handy wooden box.

The punches are made of a fine grade of cast steel, 4 inches long, hardened, tempered, and polished. They are accurately ground to standard body sizes in order that they may be used for accurately centering the bottom of holes for drilling or for transferring from one piece of work to another. For such classes of work they will be greatly appreciated, as there are no other similar tools designed for this purpose. In addition to these special uses, they will do the work of ordinary center punches.

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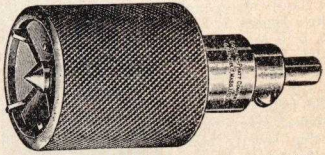
Price, per set, complete..... (YEDGY) $3.35

Packed one set in a box, $5\frac{1}{2}$ x $3\frac{1}{4}$ x 3 inches.

Weight, $1\frac{3}{4}$ pounds.

Bell Centering Punches



These very useful tools are so designed that they will quickly and accurately center both round and square stock. Each tool has four case-hardened steel bearings against which the work rests to make it less liable to be thrown out of center by any unevenness of the stock. The punch runs through a guide, which rests against the end of the stock to be centered, giving the punch an accurate bearing throughout its length. The punch is made of $\frac{5}{16}$-inch tool steel, hardened and tempered. The entire tool is polished.

		Weight		Price, Each
No. 529.	Centers up to 1 inch	$\frac{3}{4}$ pound	(YUDAP)	$1.50
No. 534.	Centers up to $1\frac{1}{2}$ inches	$1\frac{3}{8}$ pounds	(YUDYV)	1.65

Packed one in a carton.

Hand Cut Steel Letters

No. 978

This set consists of 26 hand-cut steel letters, A to Z, $\frac{3}{32}$-inch high, also one each "&" sign and period.

Every one of these letters is carefully hand cut, and not stamped or pressed out. The knurled centers are milled off on one side so that when the thumb rests on the flat part the letter is sure to be right side up and perpendicular.

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Price, per set.....(ZIKUL) $14.65
Price, per letter..... .60

Packed one set in a carton. Weight, per set, $3\frac{1}{2}$ pounds.

Hand Cut Steel Figures

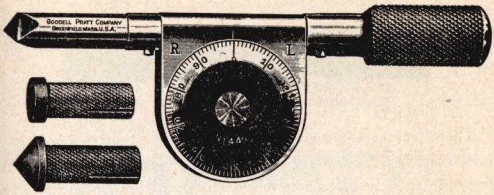
No. 980

This set consists of 9 hand-cut $\frac{3}{32}$-inch steel figures, 1, 2, 3, 4, 5, 6 (or 9), 7, 8, and 0. These are manufactured exactly the same as the letters described above, every figure being strictly hand cut, and the bodies made in such a manner that the figures are always right side up and perpendicular when in use.

Price, per set.....(ZILHA) $5.50
Price, per figure..... .60

Packed one set in a carton. Weight, per set, $1\frac{1}{2}$ pounds.

No. 449 Speed Indicator



This speed indicator is provided with a double end spindle, with a handle that can be placed on either end. This enables the operator to take the speed of either right or left hand shafts without the use of any confusing double numbers on the dial. Both ends of the spindle are hardened.

The body of the tool is neatly finished in black. Spindle and handle nicely polished. Two rubber points are furnished with each tool.

Price, each..... (YONUZ) $2.00
Price of leather case..... (WYDDA) 1.25

Packed one in a carton, $4\frac{1}{2}$ x $2\frac{1}{4}$ x $\frac{5}{8}$ inch. Weight, 6 ounces.

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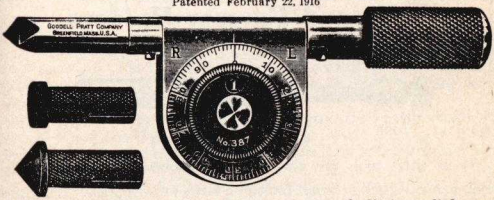
No. 387 Speed Indicator

Patented February 22, 1916



This speed indicator has two separate and distinct dials, one recording the units and another recording the hundreds up to one thousand. The dial for recording the hundreds is fitted with a friction ratchet mechanism so that it can instantly be set back to 0 by turning the knurled ring.

The spindle has a double end for taking either right or left hand shafts. Both ends of the spindle are hardened. The entire tool is fully polished and nickel plated. Two rubber points are furnished.

Price, each..... (YODON) $2.40
Price of leather case..... (WYDDA) 1.25

Packed one in a carton, $4\frac{1}{2}$ x $2\frac{1}{4}$ x $\frac{5}{8}$ inch. Weight, 6 ounces.

Tool Wrenches

These tool wrenches are so constructed that they will hold any small tools, round, square, or oval, that can be put into them. They are made entirely of case-hardened steel, and have hardened cast steel screws.

	Length	Capacity		Price, Each
No. 66	$3\frac{3}{8}$ inches	Up to $\frac{7}{32}$ inch	(YALAC)	$1.25
No. 157	6 inches	Up to $\frac{5}{16}$ inch	(YEFOF)	1.85

Packed one in a pasteboard box.

Drill and Reamer Holders

These little tools are always very convenient, particularly for holding small stock or small tools in a lathe or drill press. They are made entirely of steel with case-hardened bodies and hardened screws.

	Length	Diameter of Handle	Extreme Capacity		Price, Each
No. 67	$3\frac{1}{2}$ inches	$\frac{1}{4}$ inch	$\frac{5}{32}$ inch	(YALCA)	$0.75
No. 68	$4\frac{1}{2}$ inches	$\frac{5}{16}$ inch	$\frac{7}{32}$ inch	(YALGO)	.85
No. 69	$5\frac{1}{4}$ inches	$\frac{1}{2}$ inch	$\frac{5}{16}$ inch	(YALOG)	1.40

Packed one in a pasteboard box.

Iron Levels

With Grooved Base and Double Plumb

No. 505V

No. 506V

No. 507V

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Nos. 509V and 510V

The frames of these levels are made of smooth, well-seasoned, gray iron castings. The tops and bottoms are accurately ground and the edges nicely polished, while the bodies are finished in glossy black enamel.

The base has an accurately milled V-groove its entire length for use in lining shafting, piping, and similar uses. This groove does not interfere in any way with the use of the level for all ordinary purposes.

Each level is fitted with one high-grade level vial and two plumb vials. These are accurately set in the frame and well protected from breakage.

The 6, 9 and 12 inch sizes have closed ends and the 18 and 24 inch sizes open ends, as shown above.

	Length	Weight		Price, Each
No. 505V	6 inches	$\frac{5}{8}$ pound	(YOYEG)	$1.85
No. 506V	9 inches	1 pound	(YOYJO)	2.20
No. 507V	12 inches	$1\frac{1}{4}$ pounds	(YOYOJ)	2.30
No. 509V	18 inches	$2\frac{1}{2}$ pounds	(YOZGA)	3.35
No. 510V	24 inches	$3\frac{1}{4}$ pounds	(YOZKO)	3.85

Packed one in a carton.

Iron Bench Levels

Made of smooth, well-seasoned gray iron castings. The base and top are accurately ground, the edges are polished and the body finished in glossy black enamel.

The vials are accurately set in the frame.

	Length	Weight		Price, Each
No. 503	4 inches	5 ounces	(YOWKY)	$0.85
No. 504	6 inches	6 ounces	(YOWUJ)	1.00

Packed one in a carton.

Adjustable Bench Levels

With Ground and Graduated Vials

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These levels will meet the requirements of the most particular users. All the vials used are accurately ground and graduated, and each one is inspected before and after being set. The adjustment is close and positive.

The handles not only add to the convenience and attractiveness of the tools, but also form efficient protectors for the vials. On all the larger sizes, the supports for the handles are fastened directly to the base, so that the tube containing the vial is not disturbed in handling. Where accurate work is essential, this feature is particularly valuable, as it enables the operator to handle the level without danger of affecting its accuracy by the heat of the hand.

The bases of these levels are accurately ground and are finished in black enamel. All the tubes are polished and nickel plated.

	Length	Weight		Price, Each
No. 719	4 inches	$\frac{3}{8}$ pound	(ZASAF)	$3.20
No. 720	6 inches	$\frac{3}{4}$ pound	(ZASFA)	3.85
No. 721	8 inches	$1\frac{1}{8}$ pounds	(ZASGE)	4.50
No. 722	12 inches	3 pounds	(ZASJO)	5.95
No. 723	18 inches	$5\frac{1}{2}$ pounds	(ZASOJ)	7.70

The 4, 6, and 8 inch sizes are packed one in a carton.

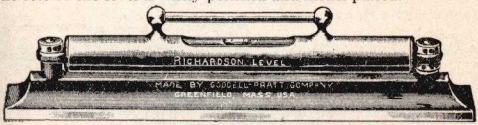
The 12 and 18 inch sizes are packed one in a wooden box.

Adjustable Bench Levels

With Plain Vials

Nos. 514, 515 and 516

Equipped with sensitive vials solidly set in a brass tube which is provided with a very close and accurate means of adjustment. The bases are accurately ground and finished in glossy black enamel. The rest of the level is finely polished and nickel plated.



Nos. 717 and 718

The 12 and 18 inch sizes are provided with a handle, which is a great convenience in handling the level and at the same time makes a very effective protection for the vial against breakage.

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	Length	Weight		Price, Each
No. 514	4 inches	$\frac{5}{16}$ pound	(YUARD)	$1.75
No. 515	6 inches	$\frac{11}{16}$ pound	(YUAWJ)	2.00
No. 516	8 inches	$1\frac{1}{8}$ pounds	(YUBEN)	2.30
No. 717	12 inches	3 pounds	(ZARUJ)	3.20
No. 718	18 inches	$5\frac{1}{2}$ pounds	(ZARYK)	4.05

The 4, 6 and 8 inch sizes are packed one in a carton.
The 12 and 18 inch sizes are packed one in a wooden box.

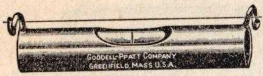
Engineers' Iron Level

This level is provided with a device for accurately giving the rise and fall of piping, shafting, a roof, or any other object. Each level is fitted with a double plumb so that the slant of uprights can also be taken. The tool is graduated to read by sixteenths up to $\frac{1}{4}$ inch. This device in no way interferes with the use of the level for ordinary purposes. Top and base accurately ground, edges polished and body black enameled.

	Length	Weight		Price, Each
No. 528	24 inches	3 pounds	(YUCYT)	$4.55

Packed one in a carton.

No. 628 Line and Surface Level



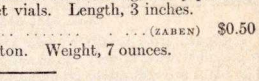
The ends of this level are equipped with open eyelets so that it can be easily strung on a line. The base is ground flat so that it can be used as a surface as well as a line level. Made of brass tubing, nicely polished and nickel plated. Accurately set vials. Length, 3 inches.

Price, each ..... (ZABEN) $0.50

Packed one half dozen in a carton. Weight, 7 ounces.

Electric Levels

Used as Attachments for Machines and Instruments



Same design and construction as No. 628 above, but without eyelets. For attachment to machinery and instruments. Also makes a useful pocket level. Full nickel finish.

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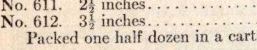
	Length		Price, Each
No. 624.	2 inches	(ZAAHS)	$0.35
No. 625.	3 inches	(ZAARD)	.40

Packed one half dozen in a carton. Weights, 4 and 6 ounces.

Nickel-Plated Pocket Levels



These levels are made from hexagon brass tubing, fully polished and nickel plated. They make very convenient and serviceable pocket levels.

	Length		Price, Each
No. 611.	2½ inches	(YUVHA)	$0.50
No. 612.	3½ inches	(YUVIK)	.65

Packed one half dozen in a carton. Weights, 5 and 12 ounces.

Iron Pocket Levels

Made of smooth iron castings with carefully milled bases and accurately set plain vials. Finished in black enamel.

	Length		Price, Each
No. 501.	2½ inches	(YOWFE)	$0.55
No. 502.	3½ inches	(YOWHO)	.65

Packed one half dozen in a carton. Weights, $1\frac{1}{5}$ and $1\frac{7}{8}$ pounds.

Hack-Saw Blades

Goodell-Pratt Hack-Saw Blades are made under these three well-known brands:

GP 888 G GP 777

TRADE MARKS REGISTERED U. S. PATENT OFFICE AND OTHER COUNTRIES

Hack-Saw list prices are subject to special discounts, which will be quoted on request.

The steel used in the manufacture of these blades is the finest quality of hot rolled steel selected for its superior performance on the class of work for which it is intended.

Every step in the hardening and tempering process is timed and checked by sensitive, automatic, electrically controlled devices that insure a very uniform product. The teeth are cut and set on machinery specially developed for these important operations. The standards which we insist on in these operations, together with the painstaking heat treating, result in exceptionally fast cutting qualities and insure the long life for which these blades are so well known. PAGE 141

At each stage in manufacture the blades are subjected to rigid inspection and continuous tests are run on blades taken from the regular production to preclude any chances of their dropping below the high standard of performance set for them.

As the life of a hand blade and the speed with which it cuts depends largely on the conditions under which it is used, the following recommendations are made as to type of blade and the number of teeth per inch (pitch) to use:

14 Teeth. For cutting soft steel, cast iron, bronze, heavy structural shapes, etc.

18 or 20 Teeth. For cutting tool steel, iron pipe, light structural shapes, etc.

24 Teeth. For cutting brass, tubing, drill rods, plates, etc.

32 Teeth. For cutting thin tubing, thin sheets and light shapes.

An all hard blade — G or GP 888 — is recommended where the piece to be cut can be securely held, as in a vise or otherwise, and a straight steady stroke can be used.

A flexible blade — GP 777 — should be used where the work is not solidly fixed and side strains and twists are inevitable.

We maintain adequate inventories on all the sizes listed, insuring you of prompt service. Special sizes, other than those listed, can be quoted on and made to order, subject to normal manufacturing delay. When making saws in dimensions other than those listed, the right is reserved to supply all that are made within 20% more or less of the quantity specified.

Full case lots of hand blades are made up of 42 gross of 8 inch, weighing 182 pounds; 27 gross of 9 inch, weighing 155 pounds; 25 gross of 10 inch, weighing 150 pounds; or 25 gross of 12 inch, weighing 180 pounds.

Hack-Saw Blades

All Hard Tungsten For Hand Frames

Ⓖ TRADE MARK REGISTERED
U. S. PATENT OFFICE AND OTHER COUNTRIES Ⓖ

The very fine tungsten alloy steel of special analysis used in the manufacture of Ⓖ Brand Hack-Saw Blades, the precise milling and set of the teeth and the careful hardening and tempering to which they are subjected give them exceptional fast-cutting qualities, long life and uniformity.

Every step in their manufacture is checked by rigid inspection. Their enviable reputation for economical performance is safeguarded by continuous tests, to be sure that the high standard set for this blade is maintained.

Ⓖ Brand Blades will cut hack-sawing costs very appreciably through their faster cutting and longer life. We will welcome the opportunity to demonstrate the fine quality of these blades under actual shop conditions.

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Be sure to specify the number of teeth per inch wanted. *Medium blades or 18 teeth to the inch will always be sent unless otherwise specified.*

Length Inches	Width Inches	Thickness Gauge	Thickness Inch	Pitch Teeth per Inch	Code	List Price per Gross
8	7/16	23	.025	14	(WUVNE)	$8.00
8	7/16	23	.025	18	(WUVSY)	8.00
8	7/16	23	.025	24	(WUVTA)	8.00
8	7/16	23	.025	32	(WUVUR)	8.00
9	1/2	23	.025	14	(WUVYS)	9.00
9	1/2	23	.025	18	(WUYAP)	9.00
9	1/2	23	.025	24	(WUYAR)	9.00
9	1/2	23	.025	32	(WUYGD)	9.00
10	1/2	23	.025	14	(WUYIR)	10.00
10	1/2	23	.025	18	(WUYLJ)	10.00
10	1/2	23	.025	24	(WUYLO)	10.00
10	1/2	23	.025	32	(WUYMK)	10.00
12	1/2	23	.025	14	(WUYSO)	12.00
12	1/2	23	.025	18	(WUYUT)	12.00
12	1/2	23	.025	24	(WUYUY)	12.00
12	1/2	23	.025	32	(WUYVY)	12 00
12	9/16	23	.025	14	(WUYWA)	13.50
12	9/16	23	.025	18	(WUYWI)	13.50
12	9/16	23	.025	24	(WUYWO)	13.50
12	9/16	23	.025	32	(WUYWS)	13.50

Packed one half gross in a carton.

Hack-Saw list prices are subject to special discounts, which will be quoted on request.

Hack-Saw Blades

All Hard For Hand Frames

GP 888

TRADE MARK REGISTERED
U. S. PATENT OFFICE AND OTHER COUNTRIES

GP 888

Through their excellent quality and fine performance these blades have made an enviable reputation for themselves in every market in the world. Their ability to cut fast and their long life reduce hack-sawing costs to the minimum.

They are made of a special alloy steel which is heat treated to produce a very hard blade. In spite of their hardness a surprising amount of flexibility is secured which contributes materially to their popularity as an all-round, general purpose blade of outstanding merit.

Every step in their manufacture is subject to the same standards and critical inspections as our other brands of blades. They are continually under test to insure the fast cutting qualities and long life for which they are known.

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Be sure to specify the number of teeth per inch wanted. *Medium blades, or 20 teeth to the inch, will be sent unless otherwise specified.*

Length Inches	Width Inches	Thickness Gauge	Thickness Inch	Pitch Teeth per Inch	Code	List Price Per Gross
8	7/16	23	.025	14	(ZETRY)	$8.00
8	7/16	23	.025	20	(ZEVMA)	8.00
8	7/16	23	.025	24	(ZEWAN)	8.00
8	7/16	23	.025	32	(ZEWPE)	8.00
9	1/2	23	.025	14	(ZETYR)	9.00
9	1/2	23	.025	20	(ZEVNE)	9.00
9	1/2	23	.025	24	(ZEWEP)	9.00
9	1/2	23	.025	32	(ZEWRO)	9.00
10	1/2	23	.025	14	(ZEVAM)	10.00
10	1/2	23	.025	20	(ZEVSY)	10.00
10	1/2	23	.025	24	(ZEWNA)	10.00
10	1/2	23	.025	32	(ZEWTY)	10.00
12	1/2	23	.025	14	(ZEVIP)	12.00
12	1/2	23	.025	20	(ZEVYS)	12.00
12	1/2	23	.025	24	(ZEWOR)	12.00
12	1/2	23	.025	32	(ZEWUS)	12.00
12	9/16	23	.025	14	(ZEVIR)	13.50
12	9/16	23	.025	20	(ZEVYV)	13.50
12	9/16	23	.025	24	(ZEWOT)	13.50
12	9/16	23	.025	32	(ZEWUX)	13.50

Packed one half gross in a carton.

Hack-Saw list prices are subject to special discounts, which will be quoted on request.

Machine Hack-Saw Blades

All Hard Tungsten

G TRADE MARK REGISTERED G
U. S. PATENT OFFICE AND OTHER COUNTRIES

A high quality of tungsten alloy steel and painstaking methods of manufacture go into G Brand Power Saw Blades.

The G stamped on these blades is proof of their quality.

Unless otherwise specified the finest pitch will always be supplied.

Light Power

Length Inches	Width Inches	Thickness Gauge	Thickness Inch	Pitch Teeth per Inch	Code	List Price Per Gross
* 12	3/4	21	.032	14	(ZUPCY)	$16.20
* 12	1/2	21	.032	18	(ZUPIX)	16.20
* 12	3/4	21	.032	12	(ZUPOZ)	19.44
* 12	3/4	21	.032	14	(ZUPUB)	19.44
* 12	3/4	21	.032	18	(ZUPVA)	19.44
14	3/4	21	.032	12	(ZUPVE)	22.68
14	3/4	21	.032	14	(ZUPVO)	22.68
14	3/4	21	.032	18	(ZUPVY)	22.68

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Heavy Power

Length Inches	Width Inches	Thickness Gauge	Thickness Inch	Pitch Teeth per Inch	Code	List Price Per Gross
* 10	3/4	18	.049	10	(ZUPWE)	$20.40
* 10	3/4	18	.049	14	(ZUPZO)	20.40
* 12	3/4	18	.049	10	(ZURAY)	24.48
* 12	3/4	18	.049	12	(ZURCO)	24.48
* 12	3/4	18	.049	14	(ZUREZ)	24.48
* 12	1	18	.049	10	(ZURIB)	32.64
* 12	1	18	.049	14	(ZUROC)	32.64
* 14	3/4	18	.049	10	(ZURUD)	28.56
* 14	3/4	18	.049	12	(ZURYA)	28.56
* 14	3/4	18	.049	14	(ZURZE)	28.56
* 14	1	18	.049	10	(ZUSAZ)	38.08
* 14	1	18	.049	14	(ZUSBE)	38.08
14	1	16	.065	10	(ZUSDO)	47.04
* 14	1 1/4	16	.065	6	(ZUSEB)	58.80
* 14	1 1/4	16	.065	10	(ZUSIC)	58.80
16	1	18	.049	10	(ZUSOD)	43.52
16	1	18	.049	14	(ZUSUF)	43.52
16	1	16	.065	10	(ZUSYG)	53.76
* 17	1	18	.049	10	(ZUSZA)	46.24
* 17	1	18	.049	14	(ZUTAB)	46.24
17	1	16	.065	10	(ZUTEC)	57.12
* 17	1 1/4	16	.065	6	(ZUTHY)	71.40
* 17	1 1/4	16	.065	10	(ZUTID)	71.40

(Continued on following page)

Hack-Saw list prices are subject to special discounts, which will be quoted on request.

Machine Hack-Saw Blades (Cont.)

All Hard Tungsten

G TRADE MARK REGISTERED G
U. S. PATENT OFFICE AND OTHER COUNTRIES

Heavy Power (Cont.)

Length Inches	Width Inches	Thickness Gauge	Thickness Inch	Pitch Teeth per Inch	Code	List Price Per Gross
18	1	18	.049	10	(ZUTOF)	$48.96
18	1	18	.049	14	(ZUTUG)	48.96
18	1	16	.065	10	(ZUTYH)	60.48
* 18	1½	16	.065	6	(ZUVAC)	75.60
* 18	1½	16	.065	10	(ZUVCA)	75.60
20	1	16	.065	10	(ZUVDE)	67.20
* 21	1½	16	.065	6	(ZUVED)	105.84
* 21	1½	16	.065	10	(ZUVGO)	105.84
24	1	16	.065	10	(ZUVIF)	80.64
* 24	1½	16	.065	6	(ZUVJY)	120.96
* 24	1½	16	.065	10	(ZUVOG)	120.96

* Indicates Standard sizes in U. S. recommended by U. S. Dept. of Commerce.

Special Tool-Room Hack Saws

6 Thicknesses .016 to .050

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Experience has taught us that it is often a matter of great convenience, especially in tool-room work, to have hack-saw blades of various thicknesses and with comparatively little set for special slotting and a variety of accurate work which otherwise could not be done with a hack saw. The blades which we have listed below will be found well adapted for these uses. The teeth are cut and swaged by a special process, different from the one we use in making the ordinary set blades. They are made in 8-inch lengths only, and can be furnished separately in any of the dimensions listed, or in sets, as desired.

Length	Thickness		Per Dozen
8 inch	.016	(ZOTZO)	$1.80
8 inch	.020	(ZOUGM)	1.80
8 inch	.028	(ZOUHN)	1.80
8 inch	.032	(ZOUJP)	1.80
8 inch	.040	(ZOUMS)	1.80
8 inch	.050	(ZOURY)	1.80

Hack-Saw list prices are subject to special discounts, which will be quoted on request.

Hack-Saw Blades

Flexible For Hand Frames

GP 777 TRADE MARK REGISTERED U. S. PATENT OFFICE AND OTHER COUNTRIES **GP 777**

For many kinds of work a flexible blade, one that will not break when subjected to severe twists and side strains, is more economical and satisfactory than an all hard blade. They are particularly well suited to the electrical and plumbing fields.

GP 777 Flexible Blades perform exceptionally well under these conditions. They are made of an alloy steel selected and proven particularly well suited for this service. They are specially heat treated so that a wide, soft section in the center runs the entire length of the blade while the teeth and back are brought to the proper degree of hardness for the work.

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GP 777 Flexible Blades are fast cutting, long lived and will not break under ordinary usage for such blades.

Be sure to specify the number of teeth per inch wanted. *Medium blades, or 18 teeth to the inch, will be furnished unless otherwise specified.*

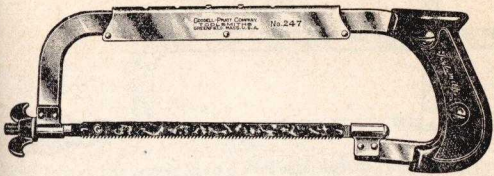
Length Inches	Width Inches	Thickness Gauge	Thickness Inch	Pitch Teeth per Inch	Code	Price per Gross
8	1/16	23	.025	14	(ZEBAR)	$8.00
8	1/16	23	.025	18	(ZEBYX)	8.00
8	1/16	23	.025	24	(ZECTE)	8.00
8	1/16	23	.025	32	(ZEDEV)	8.00
9	1/2	23	.025	14	(ZEBIT)	9.00
9	1/2	23	.025	18	(ZECAS)	9.00
9	1/2	23	.025	24	(ZECUX)	9.00
9	1/2	23	.025	32	(ZEDOY)	9.00
10	1/2	23	.025	14	(ZEBOV)	10.00
10	1/2	23	.025	18	(ZECET)	10.00
10	1/2	23	.025	24	(ZECWO)	10.00
10	1/2	23	.025	32	(ZEDTA)	10.00
12	1/2	23	.025	14	(ZEBVO)	12.00
12	1/2	23	.025	18	(ZECSA)	12.00
12	1/2	23	.025	24	(ZEDAT)	12.00
12	1/2	23	.025	32	(ZEDUZ)	12.00
12	9/16	23	.025	14	(ZEBVT)	13.50
12	9/16	23	.025	18	(ZECSO)	13.50
12	9/16	23	.025	24	(ZEDAW)	13.50
12	9/16	23	.025	32	(ZEDVA)	13.50

Packed one half gross in a carton.

Hack-Saw list prices are subject to special discounts, which will be quoted on request.

Adjustable Hack-Saw Frames

With Pistol Grip



These frames are adjustable from 8 to 12 inches, but are very much more rigid than most adjustable frames because they are made of $\frac{1}{4}$ x $\frac{3}{4}$ inch steel with an extra heavy back.

The black composition handles are molded in a single piece, peculiarly shaped to give a very comfortable grip. The frames are so designed that they balance well and hang nicely. Blades can be faced four ways.

Depth of throat, $3\frac{1}{8}$ inches. Net weight, $1\frac{7}{8}$ pounds.

One blade furnished with each frame.

			Price, Each
No. 247.	Fully Polished and Nickel Plated	(YEZUB)	$3.85
No. 247B.	Black Finish	(YEZVA)	3.10

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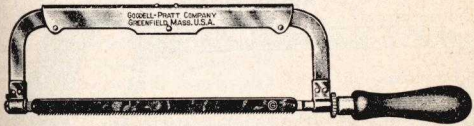
Packed one in a carton, $15\frac{3}{4}$ x $5\frac{1}{2}$ x $1\frac{1}{2}$ inches.
Weight, $2\frac{1}{8}$ pounds.

Adjustable Hack-Saw Frames



These hack-saw frames are made entirely of steel, except the handle, which is hard wood with a mahogany lacquer finish. They are very serviceable and are adjustable from 8 to 12 inches, and so designed that the blade can be faced in four different ways. Proper tension on the blade is secured by turning the handle.

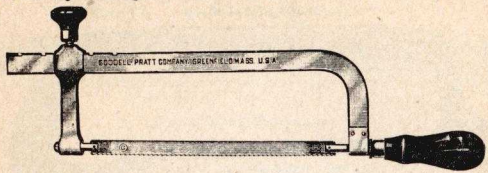
One 8-inch blade furnished with each frame.

Depth of throat, $2\frac{1}{2}$ inches. Net weight, 14 ounces.

			Price, Each
No. 1.	Bright Nickel Finish	(WYBEC)	$2.40
No. 2.	White Nickel Finish	(WYCGQ)	1.85
No. 02.	Natural Steel	(WYBUG)	1.65

Packed one in a carton, 11 x $3\frac{3}{4}$ x $1\frac{3}{8}$ inches.
Weight, 1 pound.

Heavy Adjustable Hack-Saw Frames



These frames are adjustable from 8 to 12 inches, and as the backs are made from one solid piece of $\frac{1}{4}$ x $\frac{7}{8}$ inch stock, they are always rigid, even when fully extended. The two handles are hard wood with mahogany lacquer finish.

Blades can be faced in four different ways and are strained in the frame by turning the handle.

Depth of throat, $3\frac{1}{2}$ inches. Net weight, $1\frac{7}{8}$ pounds.

One blade furnished with each frame.

		Price, Each
No. 69.	Polished and Nickel Plated Back ..... (YALUH)	$3.30
No. 69B.	Black Finish ..... (YALYJ)	2.75

Packed one in a carton, 16 x $4\frac{3}{4}$ x $1\frac{3}{4}$ inches.
Weight, $2\frac{1}{8}$ pounds.

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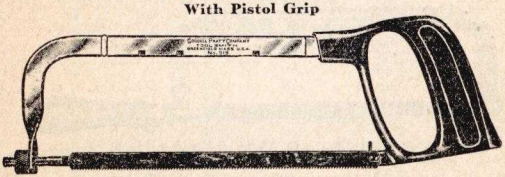
No. 919 Adjustable Hack-Saw Frame

With Pistol Grip



A justly popular frame due to its substantial construction, excellent balance, and very moderate price.

It is quickly adjustable from 8 to 12 inches, locking positively for 8, 9, 10, and 12 inch blades. The frame is white nickeled steel and the pistol grip handle a smooth aluminum casting nicely finished in red and black lacquer. Blades can be faced four ways.

Depth of throat, $2\frac{5}{8}$ inches. Net weight, 15 ounces.

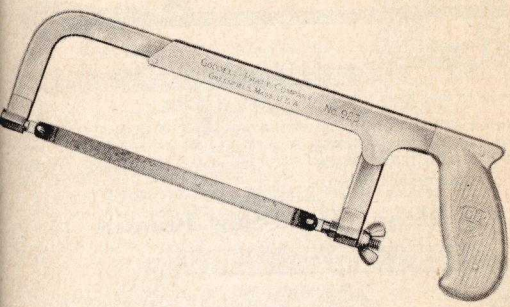
One blade furnished with each frame.

Price, each ..... (ZIDGY) **$1.10**

Packed two in a carton, 14 x $4\frac{1}{2}$ x $1\frac{1}{4}$ inches.

No. 923 Adjustable Hack Saw Frame

With All-Metal Pistol Grip



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A new addition to our line built specially to meet the most rigid specifications. Each and every frame is built to withstand an increase in tension between the studs of from 20 to 275 pounds without contracting more than $\frac{1}{4}$ inch, and when the tension is again reduced to 20 pounds the frame must spring back to its original position and shape and not show any permanent set.

They are adjustable from 8 to 12 inches, with back, arms and clips made of a very hard grade of steel. The nicely shaped pistol grip handle is made of steel stampings, serrated to give a good grip. The handle is riveted to the frame. All other joints are everlastingly welded together.

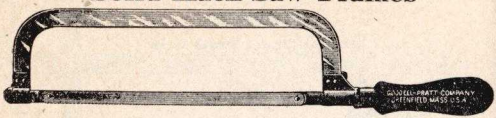
The weight is nicely distributed, giving a decidedly good "hang." Blades may be faced four ways. Depth of throat, 3 inches. Weight, 22 ounces.

One $\frac{GP}{868}$ All Hard and one $\frac{GP}{777}$ Flexible blade furnished with each frame.

		Price, Each
No. 923	With buffed nickel finish (ZIDYG)	$1.20
No. 923A	With natural steel finish (ZIDYL)	1.00

Packed one in a carton.

Solid Hack-Saw Frames



These frames are made of solid steel, natural finish. They have hard wood handles with mahogany lacquer finish. The proper tension on the blade is obtained by turning the handle. Blade can be faced four ways. Depth of throat, 2½ inches.

		Weight		Price, Each
No. 8.	For 8-inch Blade	⅝ pound	(WYHLO)	$0.90
No. 10.	For 10-inch Blade	¾ pound	(WYJAJ)	1.10
No. 12.	For 12-inch Blade	⅞ pound	(WYKON)	1.30

Packed one in a carton.

Heavy Hack-Saw Frames

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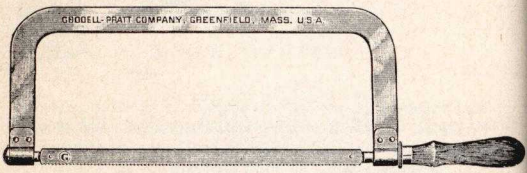


These frames are made very much heavier than the solid frames above, and will be found much more satisfactory by any one who has much heavy sawing to do by hand. They are made of heavy steel with smooth, even bends. They are made for blades of different lengths, but all throats are 3½ or 5¼ inches deep. Blades are strained in the frames by turning the hard wood handles which have a fine mahogany lacquer finish.

One blade furnished with each frame.

Depth of throat, 3½ inches.

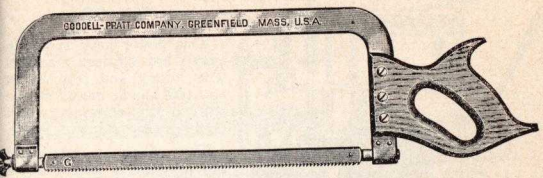
	For Blades	Back	Finish	Weight		Price, Each
No. 65.	10-inch	¼ x ⅞	Full Nickel	1½ pounds	(YAJOD)	$2.50
No. 65B.	10-inch	¼ x ⅞	Black	1½ pounds	(YAJUF)	2.00
No. 66.	12-inch	¼ x 1	Full Nickel	1¾ pounds	(YAJZA)	3.00
No. 66B.	12-inch	¼ x 1	Black	1¾ pounds	(YAKAB)	2.50

Depth of throat, 5¼ inches.

No. 14B.	12-inch	¼ x 1	Black	1⅞ pounds	(WYNNA)	$2.40
No. 67B.	13-inch	¼ x 1	Black	2 pounds	(YALED)	2.80
No. 68B.	14-inch	¼ x 1	Black	2⅛ pounds	(YALJY)	3.10

Packed one in a carton.

Heavy Hack-Saw Frames



Similar to the heavy frames listed on the preceding page but equipped with a comfortable saw handle with a mahogany lacquer finish. Proper tension on the blade is secured by tightening the wing nut shown at the left. The frame is made of $\frac{1}{4}$ x 1 inch steel with smooth, even bends. Black finish.

Depth of throat, $5\frac{1}{4}$ inches. Weight, 2 pounds 6 ounces.

One blade furnished with each frame.

		Price, Each
No. 240B.	For 14-inch Blades.....(YEYMP)	$3.10

Packed one in a carton, $25\frac{1}{4}$ x 7 x $1\frac{1}{4}$ inches.

Weight, 3 pounds.

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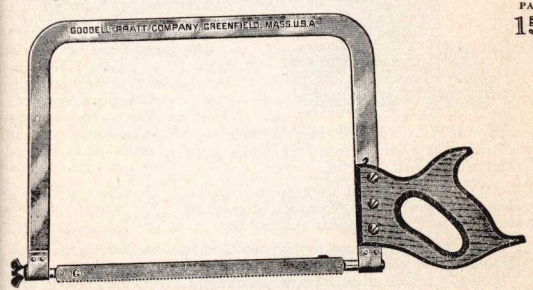


Heavy, deep-throated frames designed for cutting steel rails, I beams and other structural shapes. Made of $\frac{1}{4}$ x 1 inch steel and fitted with a saw handle and wing nut for tightening blade.

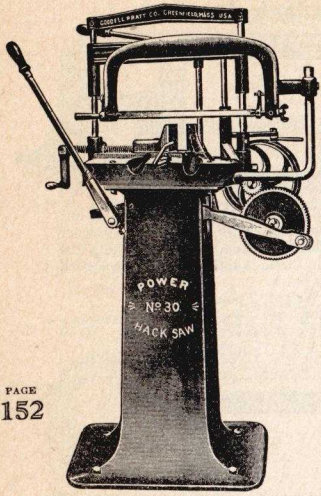
Depth of throat, $10\frac{1}{4}$ inches. Weight, 3 pounds.

One 12-inch blade furnished with each frame.

	For Blades	Finish		Price, Each
No. 15.	12-inch	Full Nickel	(WYOVZ)	$4.00
No. 15B.	12-inch	Black	(WYOWB)	3.40

Packed one in a carton, $23\frac{3}{4}$ x 12 x $1\frac{1}{4}$ inches.

Weight, $3\frac{3}{4}$ pounds.



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Power Hack Saw
No. 30

This power hack saw is a simple but efficient machine. The raising and stop levers and vise handle are all at one end of the machine, which occupies very little floor space.

The pulleys are small and the machine is geared down to the proper speed. The gears are machine cut, and are carefully fitted.

The machine is provided with an adjustable automatic stop which can be set to stop the saw at any desired depth or as soon as the work is completely cut off. This stop is connected with the clutch on the drive pulley so that it acts instantaneously.

The back of the saw frame runs in a guide, which in turn slides up and down on two perpendicular guide rods. The traveling motion is conveyed to it by a horizontal guide which runs parallel to the bottom of the vise. This feature enables the machine to be used for slotting of any desired depth.

The vise will hold work 4½ x 4½ inches. It is operated by a handled screw at the front of the machine. The bed of the vise extends beyond the jaws, another feature of practical advantage.

The tight and loose pulleys are 7 inches in diameter, geared 3 to 1. The pulley should run 150 revolutions per minute, making the blade travel at 50 strokes per minute in order to obtain the best results.

The frame is made to take either 10 or 12 inch hack saw blades. One dozen 12-inch blades with each machine.

Floor space, 25 x 15 inches. Height, 42 inches. Net weight, 155 pounds.

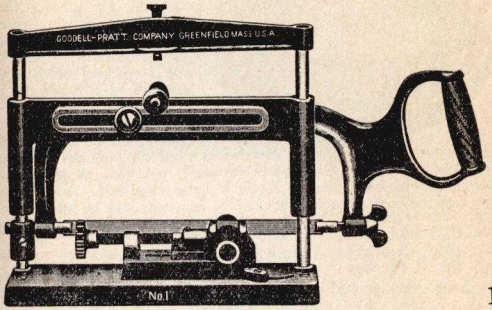
Price, each.....(YAAHY) $70.00

Crated, 46 x 26 x 17 inches. Weight, 214 pounds.

Boxed for export, 45½ x 26 x 17 inches. Weight, 235 pounds.

Bench Hack Saw
No. 1

Patented June 20, 1899



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This machine will be found very useful in any shop and particularly in the shop where power is not available. Even an unskilled operator can saw metal rods, tubing, or shapes that can be held in the vise, rapidly, truly and without blade breakage.

The blade (either 8 or 9 inch) is held in a rigid iron frame, insuring a straight true stroke. The secondary frame moves up and down on two steel posts which gives a true vertical cut and its weight is sufficient to relieve the operator from applying any downward pressure. A wing nut is provided for securing the desired tension on the blade.

A vise which will hold rods two inches square is pivoted to the base so that cuts at right angles or any angle up to mitre or 45 degrees can be made. Within this range the saw answers all the requirements of a metal cutting mitre box.

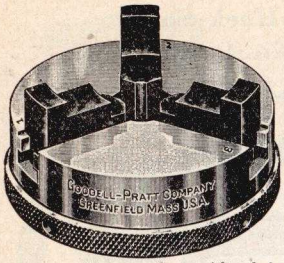
Made entirely of iron and steel, this machine is capable of long, satisfactory service. Iron parts are well finished in red and black enamel.

Height, $10\frac{1}{4}$ inches. Base, $10\frac{3}{4}$ x $3\frac{3}{4}$ inches. Stroke, $6\frac{3}{4}$ inches. Extreme capacity, 2 x 2 inches. Net weight, $10\frac{3}{4}$ pounds.

Price, complete with one blade..... (WYBAB) $10.00

Packed one in a wooden case, $18\frac{1}{2}$ x 11 x 5 inches.

Shipping weight, 16 pounds.



Scroll Chucks
With Outside Jaws

Indispensable for use on small lathes for holding work of various shapes and diameters. The jaws are operated by turning the knurled ring, moving them in or out as desired. The jaws are carefully fitted so that steps and center are accurate and concentric. Each jaw is fitted to the slot it runs in. Jaws must always run in the slot of corresponding number. After being fitted the jaws are carefully heat-treated and all other parts are nicely polished. A spanner is furnished with each chuck. No face plates furnished. A hole runs through the body of each chuck so that long rods may be held.

	Diameter	Hole	Weight		Price, Each
No. 180	2 inches	$\frac{1}{2}$ inch	1 pound	(YEJFA)	$12.75
No. 181	3 inches	$\frac{11}{16}$ inch	$2\frac{1}{4}$ pounds	(YEJLY)	14.50
No. 182	4 inches	1 inch	$4\frac{3}{4}$ pounds	(YEJYL)	19.00

PAGE 154

Each chuck packed in a carton.

Scroll Chucks
With Outside and Inside Jaws

Showing Inside Jaws

These chucks are exactly the same as those described above but with a set of inside as well as outside jaws. They are accurate, strong and serviceable. Jaws are carefully fitted to the slots they are to run in and must be used in slots of corresponding number.

	Diameter	Hole	Weight		Price, Each
No. $180\frac{1}{2}$	2 inches	$\frac{1}{2}$ inch	$1\frac{1}{8}$ pounds	(YEJGE)	$16.00
No. $181\frac{1}{2}$	3 inches	$\frac{11}{16}$ inch	$2\frac{5}{8}$ pounds	(YEJOJ)	17.50
No. $182\frac{1}{2}$	4 inches	1 inch	$5\frac{3}{8}$ pounds	(YEKAG)	24.00

Each chuck packed in a carton.

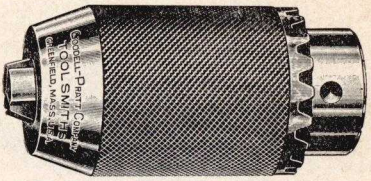
Fitting Scroll Chucks

A scroll chuck must be accurately fitted to a face plate so that it runs concentric with the lathe spindle on which it is used. Any of the chucks listed above can be fitted in this manner for use on our Nos. 125 and 494 Bench Lathes at the following prices:

Nos. 180 and $180\frac{1}{2}$ $3.00
Nos. 181 and $181\frac{1}{2}$ 3.50
Nos. 182 and $182\frac{1}{2}$ 3.50

Gear Operated Drill Chucks

Ball Bearing, with Self-Tightening Action



Patented March 8, 1927

These fine chucks were developed for production drilling, general tool room and machine shop use. They are particularly well adapted for use on portable electric drills and as regular equipment on many other types of special machinery.

They are accurate, strong and durable. The construction is steel throughout with the jaws, gear ring and other parts subject to wear carefully heat-treated. PAGE 155

Although fitted for key operation the key is not necessary except under extraordinary circumstances, as tremendous gripping power is developed by hand alone. The more torsional strain there is on the drill and jaws the tighter they grip. A patent has been granted to cover this very desirable self-tightening feature.

A ball bearing is provided that makes closing and opening of the chuck very smooth and easy. The key furnished with each chuck has hardened teeth and the cross handle is provided with a spanner.

The shanks are provided with taper holes, dimensions of which will be found below.

Dimensions of Taper Holes

Number	Capacity Inches	Diameter Large End Inches	Taper per Foot	Depth Inches	Weight Ounces	List Price
2502	0 to $\frac{1}{4}$	.388	.900	$\frac{13}{16}$	8	$4.00
2503	0 to $\frac{3}{8}$	.560	.960	$\frac{15}{16}$	16	5.00
2504	0 to $\frac{1}{2}$	.675	.625	$1\frac{1}{16}$	24	7.50
2505	0 to $\frac{5}{8}$	.806	.637	$1\frac{5}{16}$	28	8.00

Packed one chuck and key in a carton.

Goodell-Pratt Drill Chucks

The construction of these chucks is extremely simple, strong and dependable. We have used them for thirty-five years as regular equipment on the millions of hand and breast drills we have sold in that time. We have supplied large quantities to manufacturers as regular equipment on a wide variety of products and their performance, in every instance, has been highly satisfactory.

They are made entirely of steel with carefully hardened jaws actuated by three small coil springs. The shanks are carefully fitted to the chuck they are shipped with. This and the care used throughout in their manufacture accounts for the surprising accuracy maintained at the very low price at which they are sold.

No spanner or wrench is required. They can be easily tightened or loosened by hand. The shell is nicely knurled to afford a good grip.

We are prepared to deliver these chucks without shanks for special equipment in as large quantities as wanted and will quote especially attractive prices on such requirements.

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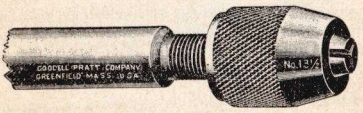
No. 13½ Goodell-Pratt Drill Chuck

Capacity 0 to 1/16 inch

Patented August 13, 1895



Although it has a small capacity, this chuck will be found excellent for any kind of small work. We sell them in very large quantities for use upon small multiple spindle drilling machines, button machinery and dental drills.

Each chuck is made entirely of steel, with three hardened jaws that will hold round shank drills of all sizes up to 1/16 inch. The construction of these chucks is extremely simple and they are not easy to get out of order.

Each chuck is furnished with a ½-inch shank unless otherwise specified. Length over all, 4 inches. Net weight, 4 ounces.

Price, each..... (WYMAM) $1.20

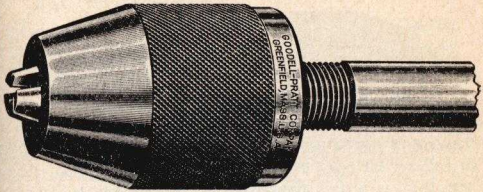
Packed one in a carton, 4¼ x 1¼ x 1¼ inches.

We shall be pleased to quote special prices on these chucks when ordered without shanks in large quantities.

Goodell-Pratt Drill Chucks

With Straight Round Shanks

Patented August 13, 1895



These chucks are fitted with lathe-turned $\frac{1}{2}$-inch or $\frac{41}{64}$-inch shanks. In ordering, be sure to specify which size is desired.

Half-inch shanks sent unless otherwise specified.

	Capacity	Weight		Price, Each
No. 14	0 to $\frac{5}{32}$ inch	4 ounces	(WYMEN)	$1.20
No. 15	0 to $\frac{1}{4}$ inch	6 ounces	(WYNUS)	1.50
No. 15½	0 to $\frac{3}{8}$ inch	9 ounces	(WYPOS)	1.80
No. 16	0 to $\frac{1}{2}$ inch	14 ounces	(WYROV)	2.40

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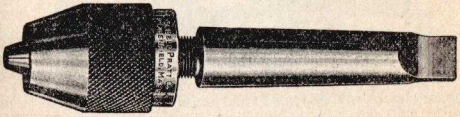
Each chuck packed in a carton.

Goodell-Pratt Drill Chucks

With Morse Taper Shanks

Patented August 13, 1895



These drill chucks are provided with standard No. 1 and No. 2 Morse Taper Shanks. In ordering, please specify which size is desired.

	Capacity	Weight, Pounds No. 1 M.T.	No. 2 M.T.		Price, Each
No. 14M.T.	0 to $\frac{5}{32}$ inch	$\frac{1}{4}$	$\frac{3}{5}$	(WYNAN)	$1.80
No. 15M.T.	0 to $\frac{1}{4}$ inch	$\frac{3}{8}$	$\frac{1}{2}$	(WYORV)	2.20
No. 15½M.T.	0 to $\frac{3}{8}$ inch	$\frac{5}{8}$	$\frac{3}{4}$	(WYRIT)	2.60
No. 16M.T.	0 to $\frac{1}{2}$ inch	$\frac{7}{8}$	1	(WYSET)	3.40

Each chuck packed in a carton.

Goodell-Pratt Drill Chucks

With Bit Brace Shanks

Patented August 13, 1895

These drill chucks have taper square shanks that can be held in an ordinary bit brace chuck. The shanks are milled on centers to keep them in perfect alignment and are hardened so that they will not be damaged by the jaws in which they are held.

	Capacity	Weight		Price, Each
No. 14B	0 to $\frac{5}{32}$ inch	4 ounces	(WYMIP)	$1.60
No. 15B	0 to $\frac{1}{4}$ inch	6 ounces	(WYOHL)	1.90
No. 15½B	0 to $\frac{3}{8}$ inch	9 ounces	(WYPPA)	2.20
No. 16B	0 to $\frac{1}{2}$ inch	14 ounces	(WYRRA)	2.90

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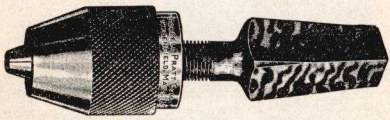
Each chuck packed in a carton.

Goodell-Pratt Drill Chucks

With Taper Square Shanks



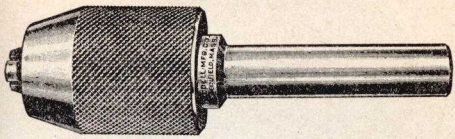
These chucks will be found very useful when it is desired to use round shank twist drills in connection with a ratchet drill. They have $\frac{3}{4}$ x $\frac{1}{2}$ x $1\frac{3}{4}$ inch taper square shanks fitting No. 2 ratchets. The shanks are milled on centers and carefully hardened.

	Capacity	Weight		Price, Each
No. 14R	0 to $\frac{5}{32}$ inch	6 ounces	(WYMNE)	$2.00
No. 15R	0 to $\frac{1}{4}$ inch	8 ounces	(WYOLP)	2.50
No. 15½R	0 to $\frac{3}{8}$ inch	12 ounces	(WYPUT)	2.80
No. 16R	0 to $\frac{1}{2}$ inch	16 ounces	(WYRVO)	4.00

Each chuck packed in a carton.

Greenfield Drill Chucks

With Straight Round Shanks



The shell of these chucks is all one piece, the shank forming the back of the chuck. The shank thread is concealed and cannot be damaged by rough usage. These chucks have a ball bearing in the center that insures smooth, easy operation. The jaws are carefully fitted and hardened. They are actuated by springs that cannot be damaged. No spanner is required to tighten these chucks but one is provided to loosen the two largest sizes. Furnished with $\frac{1}{2}$-inch or $\frac{11}{16}$-inch round shanks.

Half-inch shanks supplied unless otherwise specified.

	Capacity	Weight		Price, Each
No. 1501	0 to $\frac{5}{32}$ inch	5 ounces	(ZIYJL)	$2.00
No. 1502	0 to $\frac{1}{4}$ inch	9 ounces	(ZIYOY)	2.50
No. 1503	0 to $\frac{3}{8}$ inch	15 ounces	(ZIZAV)	3.50
No. 1504	0 to $\frac{1}{2}$ inch	21 ounces	(ZIZVA)	5.00

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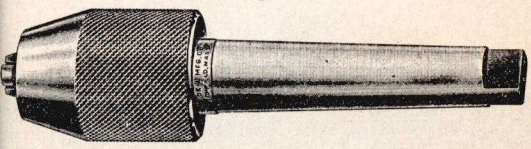
Each chuck packed in a carton.

Greenfield Drill Chucks

With Morse Taper Shanks



Same as the chucks above but provided with standard Morse Taper Shanks Nos. 1, 2, 3, and 4. Each chuck will run accurately on its own shank.

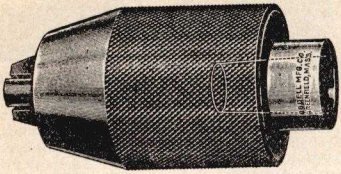
In ordering be sure to specify which size shank is desired.

	Capacity		Price, Each No. 1 or No. 2	Price, Each No. 3 or No. 4
No. 1501M.T.	0 to $\frac{5}{32}$ inch	(ZIYLN)	$2.75	
No. 1502M.T.	0 to $\frac{1}{4}$ inch	(ZIYTA)	3.25	
No. 1503M.T.	0 to $\frac{3}{8}$ inch	(ZIZIX)	4.25	$5.75
No. 1504M.T.	0 to $\frac{1}{2}$ inch	(ZIZWE)	5.75	7.25

Each chuck packed in a carton.

Greenfield Drill Chucks

With Taper Holes



These chucks are the same as those described on the preceding page, but are sold without shanks, being provided instead with taper holes. This enables the user to fit any special shank to the chuck that he desires.

PAGE		Capacity	Weight		Price, Each
160	No. 1502S.	0 to $\frac{1}{4}$ inch	$\frac{1}{2}$ pound	(ZIYVE)	$3.25
	No. 1503S.	0 to $\frac{3}{8}$ inch	$\frac{3}{4}$ pound	(ZIZUB)	4.50
	No. 1504S.	0 to $\frac{1}{2}$ inch	$1\frac{1}{8}$ pounds	(ZOAGH)	5.50

Each chuck packed in a carton.

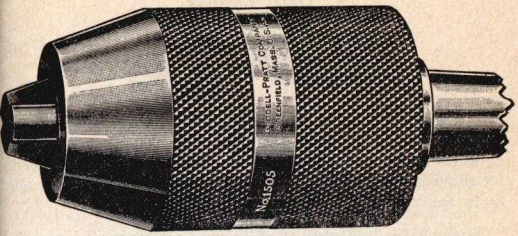
Arbors for Greenfield Drill Chucks

For the convenience of customers who do not care to make their own shanks, we can supply arbors fitting the taper holes of the chucks shown above as follows:

	Fitting No. 1502S	Fitting No. 1503S	Fitting No. 1504S	Fitting No. 1505
$\frac{1}{2}$-inch Blacksmith	$0.90	$0.90	$0.90	
$\frac{1}{4}$-inch Blacksmith	.90	.90	.90	
$\frac{3}{8}$-inch Blank	.90	.90	.90	$0.9
1-inch Blank	.90	.90	.90	.9
Morse Taper No. 1	1.50	1.50	1.50	
Morse Taper No. 2	1.50	1.50	1.50	
Morse Taper No. 3		1.65	1.65	1.6
Morse Taper No. 4			2.00	2.0

No. 1505 Greenfield Drill Chucks

Capacity 0 to ¾ inch



Similar in construction to the smaller sizes, but very much larger and heavier. They are built to stand up under the hardest kind of shop use, and will hold accurately all sizes of drills up to ¾ inch.

Furnished with either a No. 3 Morse Taper Shank, a No. 4 Morse Taper Shank, or with a taper hole instead of a shank.

			Price, Each
No. 1505M.T.	With Morse Taper Shank.....	(ZOAHJ)	$17.50
No. 1505S.	With Taper Hole.....	(ZOAJK)	17.50

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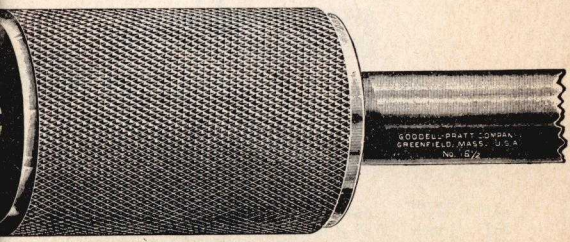
Each chuck packed in a carton.

No. 16½ Goodell-Pratt Drill Chuck

Capacity 0 to ¾ inch

Patented August 13, 1895



Similar to the other Goodell-Pratt Chucks, but much larger and heavier. Capacity up to ¾ inch.

Price, each, with 1-inch Straight Shank. ..... (WYSIV) $6.00
Price, each, with No. 3 Morse Taper Shank..... (WYSSA) 8.00

Packed one in a carton, 10¾ x 2¾ x 2¾ inches. Weight, 4½ pounds.

Attachments for Small Motors

Drill Chucks

These are our regular line of chucks described on pages 156 and 157 fitted with special shanks to fit directly on the shafts of fractional horse power electric motors, for power drilling, holding small parts for grinding and polishing, or any attachment fitted with a straight round shank.

Owing to the high speed at which small motors run it is essential that chucks used on them should be well balanced and center drills closely. Each one of these chucks is thoroughly tested before being packed.

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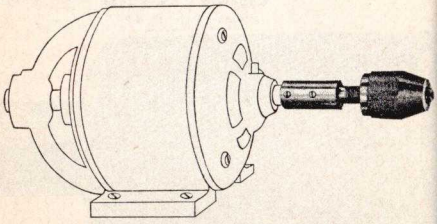
The shanks are fitted with two headless set screws for holding them securely on the motor shaft.

The chucks are made entirely of steel and have three hardened jaws that center round shank drills accurately and hold them securely. They can be easily tightened or loosened by hand.

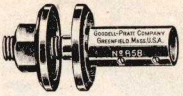


No.	Diameter Shaft	Capacity	Length Over all	Weight Ounces		Price
837	$\frac{1}{4}$ inch	0 to $\frac{5}{32}$ inch	$1\frac{7}{8}$ inches	2	(ZELUH)	$2.50
757	$\frac{3}{8}$ inch	0 to $\frac{1}{4}$ inch	3 inches	4	(ZAYON)	2.80
761	$\frac{1}{2}$ inch	0 to $\frac{3}{8}$ inch	$4\frac{1}{4}$ inches	11	(ZAZLA)	3.20
863	$\frac{1}{2}$ inch	0 to $\frac{1}{2}$ inch	$4\frac{5}{8}$ inches	16	(ZEPIJ)	3.60
861	$\frac{5}{8}$ inch	0 to $\frac{1}{2}$ inch	$4\frac{5}{8}$ inches	16	(ZEPHE)	4.00

Packed one in a carton.

Attachments for Small Motors

Arbors



These arbors are built on shanks to fit directly on the shafts of fractional horse-power electric motors for operating grinding and polishing wheels, saws, buffing wheels, brass and steel wire brush wheels and many other accessories that give the motor a very wide range of usefulness. They can also be used to mount special pulleys of varying diameters.

The steel flanges are of ample diameter to securely hold the wheels, etc., that the arbors are designed to operate. The tightening nut is hardened and runs on a deep cut thread. The shanks are fitted with two headless set screws holding the arbors tightly on the motor shaft.

No.	Diameter Shaft	Flanges Open	Diameter Between Flanges	Weight Ounces		Price
838	$\frac{1}{4}$ inch	$\frac{3}{8}$ inch	$\frac{3}{8}$ inch	3	(ZELYJ)	$2.50
758	$\frac{3}{8}$ inch	$\frac{1}{2}$ inch	$\frac{3}{8}$ inch	5	(ZAYUF)	2.50
858	$\frac{1}{2}$ inch	$\frac{3}{4}$ inch	$\frac{1}{2}$ inch	12	(ZEOZT)	2.60
868	$\frac{3}{8}$ inch	$\frac{3}{4}$ inch	$\frac{1}{2}$ inch	12	(ZEREK)	2.60

PAGE 163

Packed one in a carton.

Taper Thread Spindles

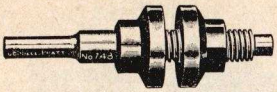
These spindles are designed to fit directly on the shafts of small electric motors or other power-driven shafts. Two sizes are made with both right and left hand threads so that both sides or ends of a shaft can be utilized when desired.

The threads are clean and deep, holding very securely cloth buffing wheels and wood centered wheels which are made for a great variety of work.

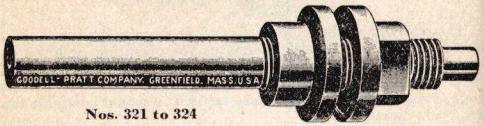
No.	Diameter Shaft	Length Overall	Weight Ounces		Price
840	$\frac{1}{4}$ inch	$2\frac{1}{4}$ inches	$1\frac{1}{2}$	(ZEMDA)	$1.10
759	$\frac{3}{8}$ inch	$3\frac{1}{4}$ inches	2	(ZAZAL)	1.20
760 L.H.	$\frac{3}{8}$ inch	$3\frac{1}{4}$ inches	2	(ZAZEM)	1.20
859	$\frac{1}{2}$ inch	$3\frac{3}{8}$ inches	5	(ZEPAG)	1.25
865 L.H.	$\frac{1}{2}$ inch	$3\frac{3}{8}$ inches	5	(ZEPOK)	1.25
869	$\frac{1}{2}$ inch	$3\frac{1}{2}$ inches	5	(ZERIL)	1.50

Packed one in a carton.

Saw or Wheel Arbors



Nos. 748 and 814 Fitting ¼-Inch Chucks



Nos. 321 to 324

These polished steel arbors will be found convenient for holding saws or wheels in chucks and lathes. They are made in six sizes. The two smaller are made especially for use with electric drills of ¼-inch capacity.

	Length	Diameter Shank	Opening Between Flanges	Diameter Between Flanges		Price Each
No. 748	3⅜ inches	¼ inch	½ inch	⅜ inch	(ZAWEK)	$1.00
No. 814	3⅜ inches	¼ inch	½ inch	½ inch	(ZEJEB)	1.00
No. 321	4 inches	⅝ inch	½ inch	⅝ inch	(YILNE)	1.00
No. 322	4¾ inches	½ inch	½ inch	½ inch	(YILYS)	1.00
No. 323	7 inches	¾ inch	¾ inch	½ inch	(YIMEP)	1.40
No. 324	10 inches	1 inch	1 inch	¾ inch	(YIMNA)	3.30

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Packed one in a carton.

No. 70 Circular Saws

For Metal, Bakelite, Fibre, Bone, or Ivory

These moderately priced circular saws are most satisfactory for cutting copper, brass, silver, bakelite, fibre, ivory, bone, and similar materials.

Exceptional quality is obtained by use of the highest grade of hot rolled sheet steel. The teeth are carefully cut and oil tempered, making them well suited for screw slotting or cutting shallow slots in iron or steel.

These saws are made in six sizes and thicknesses as follows:

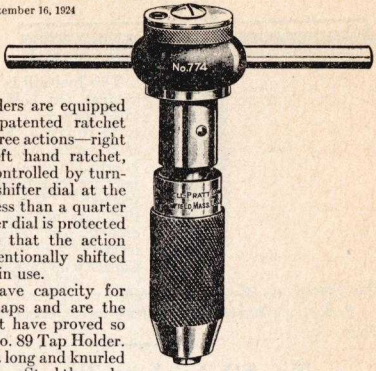
Thickness	1 inch ⅜ inch	1¼ inch ⅜ inch	1½ inch ⅜ inch	2 inch ⅝ inch	2½ inch ⅝ inch	3 inch ½ inch	Diameter Hole
.016 inch	$2.20	$2.50	$2.80	$3.20	$3.80	$4.80	per Doz.
.021 inch	2.20	2.50	2.80	3.20	3.80	4.80	per Doz.
.028 inch	2.20	2.50	2.80	3.20	3.80	4.80	per Doz.
.032 inch	2.20	2.50	2.80	3.20	3.80	4.80	per Doz.
.040 inch	2.20	2.50	2.80	3.20	3.80	4.80	per Doz.
.050 inch	2.20	2.50	2.80	3.20	3.80	4.80	per Doz.

Packed one dozen in a carton.

Ratchet Tap Holders

Capacity 3/8-Inch Taps

Patented September 16, 1924



These tap holders are equipped with our new patented ratchet mechanism. Three actions—right hand ratchet, left hand ratchet, and rigid—are controlled by turning the knurled shifter dial at the top of the tool less than a quarter turn. The shifter dial is protected with a plate so that the action cannot be unintentionally shifted while the tool is in use.

The chucks have capacity for holding 3/8-inch taps and are the same chucks that have proved so reliable on our No. 89 Tap Holder. The shell is extra long and knurled to give a good grip. Steel throughout, nicely polished except for the ratchet body, which has a mottled case-hardened finish.

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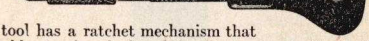
	Length over all	Weight		Price, Each
No. 774	$3\frac{7}{8}$ inches	$\frac{1}{2}$ pound	(ZEASK)	$2.50
No. 776	$12\frac{7}{8}$ inches	$1\frac{1}{8}$ pounds	(ZEAWN)	3.30

Packed one in a carton.

No. 328 Ratchet Tool or Tap Holder

Capacity 7/32-Inch Taps



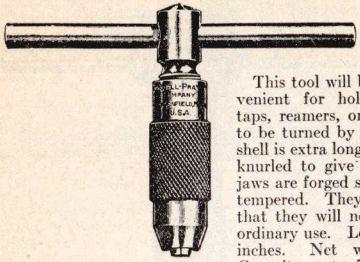
This tool has a ratchet mechanism that is operated by turning the knurled collar nearest to the handle. The chuck is made entirely of steel, with a long knurled shell. The jaws are forged, hardened, and tempered. They are so designed that they will not break. The handle is mahogany-finished hard wood. All exposed metal parts are polished. Length over all, $4\frac{3}{4}$ inches. Net weight, 4 ounces. Capacity up to $\frac{7}{32}$-inch taps.

Price, each..... (YIMUS) $1.50

Packed one in a carton, 5 x $1\frac{3}{4}$ x $1\frac{1}{2}$ inches. Weight, 5 ounces.

No. 88 Tool or Tap Holder

Capacity 7/32-Inch Taps



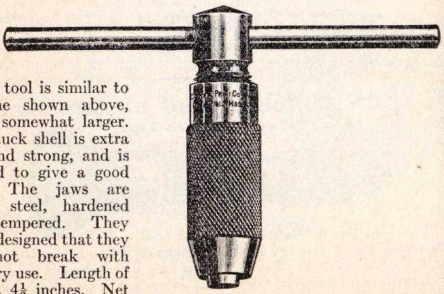
This tool will be found very convenient for holding small drills, taps, reamers, or other small tools to be turned by hand. The chuck shell is extra long and strong, and is knurled to give a firm grip. The jaws are forged steel, hardened and tempered. They are so designed that they will not break with any ordinary use. Length of handle, $3\frac{1}{2}$ inches. Net weight, 3 ounces. Capacity up to $\frac{7}{32}$-inch taps.

Price, each..... (YATPO) $0.60

Packed one in a carton, 4 x 3 x $\frac{3}{4}$ inch. Weight, 4 ounces.

No. 89 Tool or Tap Holder

Capacity 3/8-Inch Taps



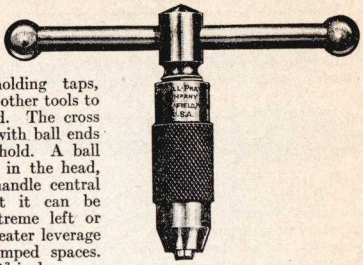
This tool is similar to the one shown above, but is somewhat larger. The chuck shell is extra long and strong, and is knurled to give a good grip. The jaws are forged steel, hardened and tempered. They are so designed that they will not break with ordinary use. Length of handle, $4\frac{1}{2}$ inches. Net weight, $4\frac{1}{2}$ ounces. Capacity to $\frac{3}{8}$-inch taps.

Price, each..... (YATYR) $0.80

Packed one in a carton, 5 x 3 x 1 inch. Weight, 6 ounces.

No. 828 Tool or Tap Holder

Capacity 7/32-Inch Taps



Designed for holding taps, reamers, drills and other tools to be turned by hand. The cross handles are fitted with ball ends to afford a good hold. A ball friction is located in the head, which keeps the handle central as illustrated, but it can be slipped to the extreme left or right at will for greater leverage or for use in cramped spaces. Length of handle, 3⅜ inches.

Construction, otherwise, is the same as No. 88 on the opposite page. Capacity, 7/32-inch tops. Net weight, 3 ounces.

Price, each..... (ZEKYH) $0.70

Packed one in a carton.

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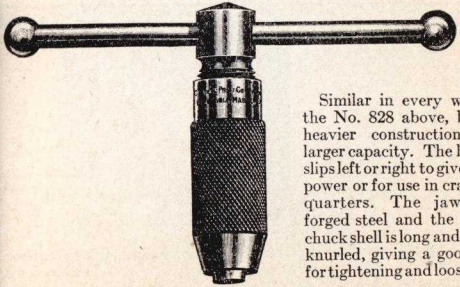
No. 829 Tool or Tap Holder

Capacity ⅜-Inch Taps



Similar in every way to the No. 828 above, but of heavier construction and larger capacity. The handle slips left or right to give more power or for use in cramped quarters. The jaws are forged steel and the heavy chuck shell is long and nicely knurled, giving a good grip for tightening and loosening.

Capacity, ⅜-inch taps. Net weight, 5 ounces.

Price, each..... (ZELAC) $0.90

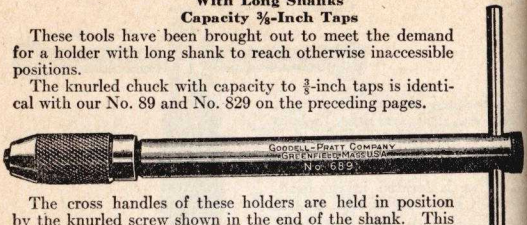
Packed one in a carton.

Tool or Tap Holders

With Long Shanks
Capacity ⅜-Inch Taps

These tools have been brought out to meet the demand for a holder with long shank to reach otherwise inaccessible positions.

The knurled chuck with capacity to ⅜-inch taps is identical with our No. 89 and No. 829 on the preceding pages.



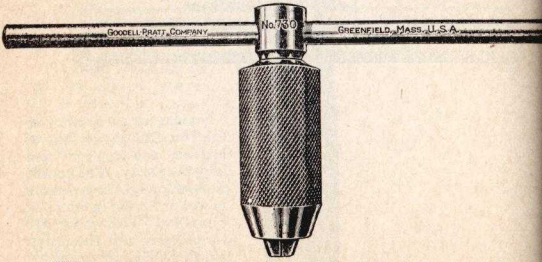
The cross handles of these holders are held in position by the knurled screw shown in the end of the shank. This permits shifting the length to one side or the other giving a much greater leverage than in the central position. By removing the knurled screw the handle can be carried in the hollow shank, conserving space.

	Length of Shank	Length Overall		
No. 689	6 inches	8½ inches	(ZAMIB)	$1.55
PAGE No. 789	10 inches	12¼ inches	(ZEFAV)	2.00

168 Packed one in a carton.

No. 730 Tool or Tap Holders

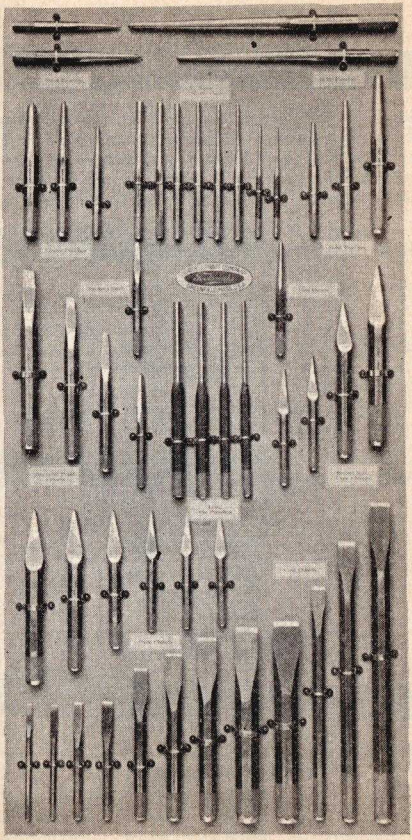
Capacity ½-Inch Taps



This tool is considerably heavier than those shown heretofore, having a capacity for ½-inch taps. The handle is 10 inches long, affording ample leverage to perform any work within its capacity easily and quickly. Net weight, 1 pound.

Price, each..... (ZATKO) $2.30

Packed one in a carton.



Cold Chisels **Cape Chisels** **Diamond Point Chisels**
Center Punches **Drift Punches** **Pin Punches** **Prick Punches**

Cold Chisels

The chisels and punches shown on this and the following pages are hammer forged from a high grade of octagon *alloy* steel selected for its extreme toughness. The care exercised in heat treating results in a uniformly high grade chisel. The blades and heads are ground and nicely polished. The heads have a distinctive vermilion lacquer finish.

	Width of Blade	Diam. of Stock	Length Over All	Packed per Carton		Price per Doz.
No. 1150	$\frac{1}{4}$ inch	$\frac{1}{4}$ inch	5 inches	12	(ZUKER)	$2.50
No. 1152	$\frac{5}{16}$ inch	$\frac{1}{4}$ inch	5 inches	12	(ZAZYR)	2.60
No. 1154	$\frac{3}{8}$ inch	$\frac{3}{8}$ inch	5 inches	12	(YOONY)	2.90
No. 1156	$\frac{1}{2}$ inch	$\frac{3}{8}$ inch	5 inches	12	(YOOLV)	3.10
No. 1158	$\frac{5}{8}$ inch	$\frac{1}{2}$ inch	$6\frac{1}{2}$ inches	6	(YUZYR)	5.20
No. 1160	$\frac{3}{4}$ inch	$\frac{5}{8}$ inch	7 inches	6	(ZABAM)	7.00
No. 1162	$\frac{7}{8}$ inch	$\frac{3}{4}$ inch	$7\frac{1}{2}$ inches	3	(ZABIP)	10.00
No. 1164	1 inch	1 inch	8 inches	3	(ZEAHY)	12.00
No. 1166	$1\frac{1}{8}$ inch	1 inch	$8\frac{1}{2}$ inches	3	(ZUKTO)	14.00

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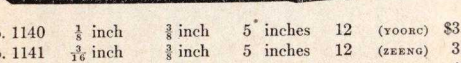
Long Cold Chisels

Same as the chisels above but longer.

No. 1170	$\frac{5}{8}$ inch	$\frac{1}{2}$ inch	10 inches	3	(ZUKWY)	$7.20
No. 1172	$\frac{3}{4}$ inch	$\frac{5}{8}$ inch	12 inches	3	(ZULIT)	10.00
No. 1174	$\frac{7}{8}$ inch	$\frac{3}{4}$ inch	14 inches	3	(ZULRA)	16.00

Cape Chisels



No. 1140	$\frac{1}{4}$ inch	$\frac{3}{8}$ inch	5 inches	12	(YOORC)	$3.50
No. 1141	$\frac{3}{16}$ inch	$\frac{3}{8}$ inch	5 inches	12	(ZEENG)	3.90
No. 1142	$\frac{1}{4}$ inch	$\frac{3}{8}$ inch	5 inches	12	(YOOPZ)	4.30
No. 1143	$\frac{5}{16}$ inch	$\frac{1}{2}$ inch	6 inches	6	(ZEEPH)	5.80
No. 1144	$\frac{3}{8}$ inch	$\frac{5}{8}$ inch	7 inches	6	(ZEERK)	7.80
No. 1145	$\frac{1}{2}$ inch	$\frac{3}{4}$ inch	$7\frac{1}{2}$ inches	6	(ZEEWP)	10.80

Square Chisel

	Width of Point	Diam. of Stock	Length Over All	Packed per Carton		Price Per Doz.
No. 1176	$\frac{5}{32}$ inch	$\frac{3}{8}$ inch	5 inches	12	(YOOSD)	$2.65

Diamond Point Chisels

No. 1178	$\frac{5}{32}$ inch	$\frac{3}{8}$ inch	5 inches	12	(YOOVG)	$2.65
No. 1180	$\frac{1}{4}$ inch	$\frac{1}{2}$ inch	6 inches	6	(ZULVO)	5.00
No. 1182	$\frac{3}{8}$ inch	$\frac{5}{8}$ inch	7 inches	6	(ZUMAS)	7.00
No. 1184	$\frac{1}{2}$ inch	$\frac{3}{4}$ inch	8 inches	6	(ZUMIV)	10.00

Round Nose Cape Chisels

No. 1190	$\frac{1}{8}$ inch	$\frac{3}{8}$ inch	5 inches	12	(ZUMTE)	$3.50
No. 1191	$\frac{1}{4}$ inch	$\frac{1}{2}$ inch	6 inches	6	(YOPAV)	5.80
No. 1192	$\frac{3}{8}$ inch	$\frac{5}{8}$ inch	7 inches	6	(ZUMUX)	7.80
No. 1193	$\frac{1}{2}$ inch	$\frac{3}{4}$ inch	8 inches	6	(ZUMWO)	10.80

Aligning or Drift Punches

The points of these punches have a long even taper and a very high polished mirror finish so that they drive easily in tight fits. Will not bend or break. Indispensable for automotive work and assembling structural steel.

No. 1208	$\frac{3}{16}$ inch	$\frac{1}{2}$ inch	10 inches	3	(ZUNUZ)	$7.20
No. 1210	$\frac{1}{4}$ inch	$\frac{5}{8}$ inch	12 inches	3	(ZUNVE)	10.00

Center Punch

The punches on this page are the same fine quality tools as shown on the two preceding pages. They are made of *alloy* steel carefully heat treated and the points ground and nicely polished.

	Diam. of Stock	Length Over All	Packed per Carton		Price per Doz.
No. 1202	$\frac{3}{8}$ inch	5 inches	12	(YOPUB)	$2.65
No. 1204	$\frac{1}{2}$ inch	$5\frac{1}{2}$ inches	6	(ZUNOY)	4.40
No. 1206	$\frac{5}{8}$ inch	6 inches	6	(ZUNTA)	4.80

Prick Punch

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No. 1199	$\frac{3}{8}$ inch	5 inches	12	(YOPOZ)	$2.65
No. 1201	$\frac{1}{2}$ inch	6 inches	6	(ZUNEV)	4.80

Solid Punch

	Width of Point	Diam. of Stock	Length Over All	Packed per Carton		Price per Doz.
No. 1195	$\frac{5}{32}$ inch	$\frac{3}{8}$ inch	5 inches	12	(YOPCY)	$2.65
No. 1196	$\frac{1}{4}$ inch	$\frac{1}{2}$ inch	6 inches	6	(ZUMZY)	4.80
No. 1197	$\frac{3}{8}$ inch	$\frac{5}{8}$ inch	7 inches	6	(ZUNAT)	6.60

Cup Punch

No. 1198	$\frac{5}{32}$ inch	$\frac{3}{8}$ inch	5 inches	12	(YOPIX)	$2.65

The above tools packed one dozen in a carton.

Taper Pin Punches

Forged from a high grade of octagon *alloy* steel, $\frac{3}{8}$-inch in diameter (except the two smallest sizes which are $\frac{1}{4}$-inch) and about 6 inches long. They are carefully heat-treated and the points and heads well ground and polished. They have the same distinctive vermillion lacquered head that is used on the rest of our punch and chisel line.

	Size	Diameter Stock		Per Dozen
No. 573	$\frac{3}{32}$ inch	$\frac{1}{4}$ inch	(YUMEZ)	$2.40
No. 413	$\frac{1}{8}$ inch	$\frac{1}{4}$ inch	(YOHYT)	2.40
No. 574	$\frac{5}{32}$ inch	$\frac{3}{8}$ inch	(YUMIB)	2.40
No. 415	$\frac{3}{16}$ inch	$\frac{3}{8}$ inch	(YOILT)	2.40
No. 575	$\frac{7}{32}$ inch	$\frac{3}{8}$ inch	(YUMOC)	2.40
No. 416	$\frac{1}{4}$ inch	$\frac{3}{8}$ inch	(YOIPY)	2.40
No. 417	$\frac{5}{16}$ inch	$\frac{3}{8}$ inch	(YOIRB)	2.40
No. 418	$\frac{3}{8}$ inch	$\frac{3}{8}$ inch	(YOJAP)	2.40

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Packed one dozen in a carton. Average weight, 2 pounds.

Long Heavy Pin Punches

These punches are heavier and longer than those listed above. The points are $3\frac{1}{2}$ inches long and are made of tool steel carefully hardened and polished. The shanks are made of hexagonal steel with a hardened and polished head. Over-all length, 9 inches.

	Point	Shank		Per Dozen
No. 792	$\frac{3}{16}$ inch	$\frac{3}{8}$ inch	(ZEFUB)	$5.00
No. 793	$\frac{1}{4}$ inch	$\frac{3}{8}$ inch	(ZEFVA)	5.00
No. 794	$\frac{5}{16}$ inch	$\frac{1}{2}$ inch	(ZEFWE)	5.00
No. 795	$\frac{3}{8}$ inch	$\frac{1}{2}$ inch	(ZEFZO)	5.00
No. 796	Set of Four Sizes.....		(ZEGBO)	1.70

Packed one dozen or one set in a carton

Pin Punch Set
No. 572

A useful and convenient set made up of the 8 sizes of punches shown at the top of the preceding page, as follows: $\frac{3}{32}$, $\frac{1}{8}$, $\frac{5}{32}$, $\frac{3}{16}$, $\frac{7}{32}$, $\frac{1}{4}$, $\frac{5}{16}$, and $\frac{3}{8}$ inch.

The container is a round hardwood block and cover nicely turned and finished, providing a convenient holder.

Price, per set, complete ..... (YUMCO) $2.30

Packed one in a carton, $7\frac{1}{2}$ x $3\frac{1}{4}$ x 3 inches.

Weight, 2 pounds.

Pin Punch Set
No. 472

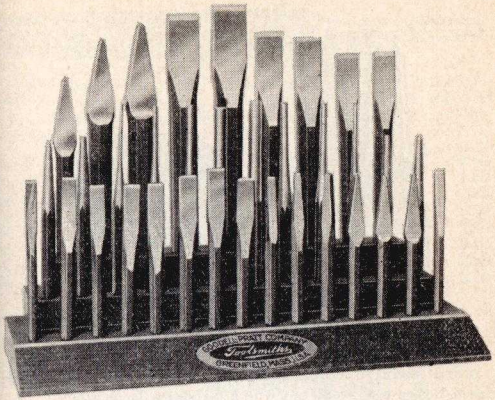
This set is made up of an assortment of the pin punches shown at the top of the preceding page. It contains five sizes with points of the following diameters: $\frac{1}{8}$, $\frac{3}{16}$, $\frac{1}{4}$, $\frac{5}{16}$, and $\frac{3}{8}$ inch.

Price, per set ..... (YOREZ) $1.00

Packed one in a carton, $6\frac{3}{8}$ x $2\frac{1}{4}$ x $\frac{5}{8}$ inch.

Weight, 13 ounces.

No. 873 Chisel and Punch Display



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A very neat, effective counter display of a popular assortment of cold chisels and punches all of which are mounted in the dull black wood fixture. The thirty-six tools making up the assortment are as follows:

1 No. 413 1/8 inch Pin Punch
1 No. 415 3/16 inch Pin Punch
1 No. 416 1/4 inch Pin Punch
1 No. 417 5/16 inch Pin Punch
1 No. 418 3/8 inch Pin Punch
1 No. 573 3/32 inch Pin Punch
1 No. 574 5/32 inch Pin Punch
1 No. 575 7/32 inch Pin Punch
1 No. 1140 3/8 inch Cape Chisel
1 No. 1141 5/16 inch Cape Chisel
1 No. 1142 1/4 inch Cape Chisel
1 No. 1143 5/16 inch Cape Chisel
1 No. 1144 3/8 inch Cape Chisel
1 No. 1145 1/2 inch Cape Chisel
1 No. 1152 5/16 inch Cold Chisel
1 No. 1154 3/8 inch Cold Chisel
1 No. 1156 1/2 inch Cold Chisel
1 No. 1158 5/8 inch Cold Chisel
1 No. 1160 3/4 inch Cold Chisel
1 No. 1162 7/8 inch Cold Chisel
1 No. 1164 1 inch Cold Chisel
1 No. 1166 1 1/4 inch Cold Chisel
1 No. 1176 5/32 inch Square Chisel
1 No. 1178 5/32" Diamond Point Chisel
1 No. 1180 1/4" Diamond Point Chisel
1 No. 1182 3/8" Diamond Point Chisel
1 No. 1190 1/8" Round Nose Cape Chisel
1 No. 1191 1/4" Round Nose Cape Chisel
1 No. 1192 3/8" Round Nose Cape Chisel
1 No. 1195 5/32 inch Solid Punch
1 No. 1198 5/32 inch Cup Punch
1 No. 1199 Prick Punch
1 No. 1201 Prick Punch
1 No. 1202 Center Punch
1 No. 1204 Center Punch
1 No. 1206 Center Punch

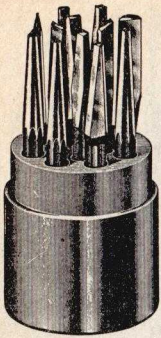
For complete details of individual tools, see pages 170 to 173.

Price, complete ..... (ZERPY) **$14.50**

The tools are packed in a carton, 8 1/4 x 4 5/8 x 2 1/2 inches. Fixture packed separately. Weight, 10 3/8 pounds.

Chisel and Punch Set

No. 470



PAGE 176

A most useful set of forged chisels and punches put up in a convenient turned hard wood box with a mahogany lacquer finish.

The set consists of the 12 tools listed below which are fully described on pages 170, 171 and 172.

1—No. 1150 $\frac{1}{4}$ inch Cold Chisel
1—No. 1154 $\frac{3}{8}$ inch Cold Chisel
1—No. 1156 $\frac{1}{2}$ inch Cold Chisel
1—No. 1140 $\frac{1}{8}$ inch Cape Chisel
1—No. 1142 $\frac{1}{4}$ inch Cape Chisel
1—No. 1176 $\frac{5}{32}$ inch Square Chisel
1—No. 1178 $\frac{5}{32}$ inch Diamond Point Chisel
1—No. 1190 $\frac{1}{8}$ inch Round Nose Cape Chisel
1—No. 1195 $\frac{5}{32}$ inch Solid Punch
1—No. 1198 $\frac{5}{32}$ inch Cup Punch
1—No. 1199 Prick Punch
1—No. 1202 Center Punch

Each tool forged from octagon *alloy* steel, carefully hardened and tempered with well ground and polished points and heads.

Price, per set..... (YORAY) $3.40

Packed one set in a carton, $6\frac{1}{2}$ x $3\frac{1}{4}$ x 3 inches.

Weight, $2\frac{1}{2}$ pounds.

Machinists' Pin Punches

These punches are made from a very high grade of round tool steel about four inches long. The centers are knurled and the points and shanks nicely polished. Every punch is very carefully hardened and tempered its entire length. Blued finish.

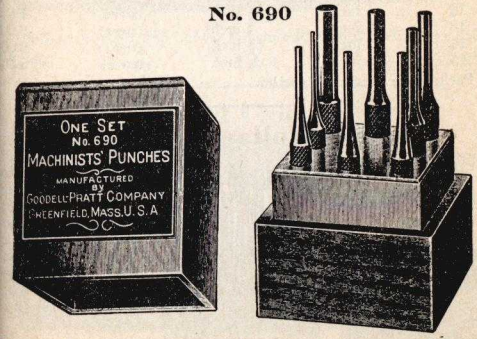
	Point	Stock		Price, per Dozen
No. 681	$\frac{1}{16}$ inch	$\frac{5}{16}$ inch	(ZALIZ)	$2.80
No. 682	$\frac{3}{32}$ inch	$\frac{5}{16}$ inch	(ZALOB)	2.80
No. 683	$\frac{1}{8}$ inch	$\frac{5}{16}$ inch	(ZALUC)	2.80
No. 684	$\frac{5}{32}$ inch	$\frac{5}{16}$ inch	(ZALWA)	2.80
No. 685	$\frac{3}{16}$ inch	$\frac{3}{8}$ inch	(ZALYE)	2.80
No. 686	$\frac{7}{32}$ inch	$\frac{3}{8}$ inch	(ZAMAY)	2.80
No. 687	$\frac{1}{4}$ inch	$\frac{3}{8}$ inch	(ZAMCO)	2.80
No. 688	$\frac{5}{16}$ inch	$\frac{3}{8}$ inch	(ZAMEZ)	2.80

Packed one dozen in a pasteboard box.
Average weight, 1 pound.

Machinists' Punch Set

PAGE 177

No. 690



This set consists of eight machinists' punches, one of each of the following sizes, $\frac{1}{16}$, $\frac{3}{32}$, $\frac{1}{8}$, $\frac{5}{32}$, $\frac{3}{16}$, $\frac{7}{32}$, $\frac{1}{4}$, and $\frac{5}{16}$, put up in a handsome square box as shown in the illustration.

Price, per set, complete..... (ZAMOC) $2.30

Packed one set in a pasteboard box, $4\frac{3}{4}$ x $2\frac{7}{8}$ x $2\frac{7}{8}$ inches.
Weight, $1\frac{1}{4}$ pounds.

No. 997 Hollow Punches

For Leather, Etc.

These punches are made from a very high grade of round tool steel about 4 inches long. The centers are knurled to insure a firm grip. They are very carefully hardened and tempered their entire length. The cutting edges are sharpened.

Made in fifteen sizes as follows:

	Size of Knurling	Hole		Price, per Dozen
No. 1	$\frac{3}{32}$ inch	$\frac{5}{64}$ inch	(ZINKA)	$4.00
No. 2	$\frac{3}{32}$ inch	$\frac{3}{32}$ inch	(ZINLE)	4.00
No. 3	$\frac{3}{32}$ inch	$\frac{7}{64}$ inch	(ZINNO)	4.00
No. 4	$\frac{3}{32}$ inch	$\frac{1}{8}$ inch	(ZINON)	4.00
No. 5	$\frac{3}{32}$ inch	$\frac{9}{64}$ inch	(ZINUP)	4.00
No. 6	$\frac{3}{32}$ inch	$\frac{5}{32}$ inch	(ZIOXY)	4.00
No. 7	$\frac{3}{32}$ inch	$\frac{3}{16}$ inch	(ZIPAL)	4.00
No. 8	$\frac{7}{16}$ inch	$\frac{7}{32}$ inch	(ZIPEM)	4.30
No. 9	$\frac{7}{16}$ inch	$\frac{1}{4}$ inch	(ZIPLA)	4.30
No. 10	$\frac{7}{16}$ inch	$\frac{9}{32}$ inch	(ZIPME)	4.30
No. 11	$\frac{7}{16}$ inch	$\frac{5}{16}$ inch	(ZIPOP)	4.85
No. 12	$\frac{7}{16}$ inch	$\frac{11}{32}$ inch	(ZIPPO)	4.85
No. 13	$\frac{9}{16}$ inch	$\frac{3}{8}$ inch	(ZIPPR)	6.00
No. 14	$\frac{9}{16}$ inch	$\frac{13}{32}$ inch	(ZIPRA)	6.00
No. 15	$\frac{9}{16}$ inch	$\frac{7}{16}$ inch	(ZIPRI)	6.00

Packed one dozen in a carton.

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No. 950 Hollow Punch Set

This set consists of one each of our No. 997 drive punches, sizes 1 to 12, put up in a round wooden box with a good mahogany lacquer finish. This makes a very handy outfit.

Price, per set, complete (ZIGUH) $4.85

Packed one set in a carton, $5\frac{3}{8}$ x $3\frac{1}{4}$ x $3\frac{1}{4}$ inches. Weight, 2 pounds.

Center Punches

All of the tools listed on this page are made from a fine quality of tool steel, tempered their entire length. The points are carefully ground. The centers are knurled and the points and heads nicely polished.

Length, 4 inches. Blued finish.

	Approx. Diam. Point	Diam. Stock		Price per Dozen
No. 994	$\frac{5}{16}$ inch	$\frac{3}{8}$ inch	(ZIMPY)	$2.20
No. 991	$\frac{6}{64}$ inch	$\frac{3}{8}$ inch	(ZIMJA)	2.20
No. 995	$\frac{13}{64}$ inch	$\frac{3}{8}$ inch	(ZIMYP)	2.20

Prick Punch

PAGE 179

Same as the No. 995 Center Punches above but with longer point.

No. 998	$\frac{13}{64}$ inch	$\frac{3}{8}$ inch	(ZIPRY)	$2.00

Cold Chisel

No. 992	$\frac{1}{8}$ inch	$\frac{3}{8}$ inch	(ZIMKE)	$3.30

Cold Chisel

No. 993	$\frac{1}{4}$ inch	$\frac{3}{8}$ inch	(ZIMMO)	$3.30

All of the above tools are packed one dozen in a carton, $4\frac{3}{8}$ x $1\frac{7}{8}$ x $1\frac{3}{8}$ inches.

Average weight, per box, $1\frac{1}{4}$ pounds.

Chisels, Punches and Sets

These tools are made of a fine quality of $\frac{3}{8}$-inch round tool steel, 4 inches long. The points are carefully shaped, ground and polished. The centers are knurled and afford a good grip.

Each tool carefully hardened and tempered its entire length. Blued finish.

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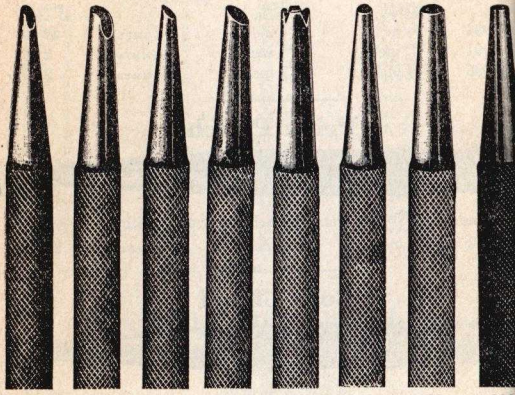

No. 983 984 985 986 987 988 989 996

	Point Inch			Price per Doz
No. 983	$\frac{1}{8}$	Concave Chisel	(ZILLO)	$4.00
No. 984	$\frac{3}{16}$	Concave Chisel	(ZILNY)	3.65
No. 985	$\frac{1}{8}$	Straight Angle Chisel	(ZILOL)	3.30
No. 986	$\frac{3}{16}$	Straight Angle Chisel	(ZILUM)	3.30
No. 987	$\frac{7}{32}$	Rivet Set	(ZILYN)	3.65
No. 988	$\frac{1}{8}$	Round Nose Punch	(ZIMAJ)	3.30
No. 989	$\frac{3}{16}$	Round Nose Punch	(ZIMEK)	3.30
No. 996	$\frac{2}{32}$ to $\frac{5}{32}$ or asst.	Solid Punch	(ZINAK)	1.80

All packed one dozen in a carton, $4\frac{3}{8}$ x $1\frac{7}{8}$ x $1\frac{3}{8}$ inches.

Average weight per carton, $1\frac{1}{4}$ pounds.

Machinists' Handy Set

No. 975

This set is made of a very useful assortment of 15 chisels, punches and sets, all made from a high quality tool steel $\frac{3}{8}$-inch in diameter with a well knurled center. The points and heads are carefully shaped, hardened and tempered and polished with a blued finish.

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The container is a well turned, hardwood box, nicely finished. It will be found handy on a workbench or in a tool chest.

Full descriptions of the tools making up this set, as listed below, will be found on pages 178, 179, 180 and 321.

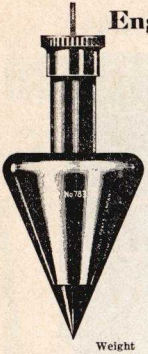
No. 983	$\frac{1}{8}$ inch	Concave Chisel
No. 984	$\frac{3}{16}$ inch	Concave Chisel
No. 985	$\frac{1}{8}$ inch	Straight Angle Chisel
No. 986	$\frac{3}{16}$ inch	Straight Angle Chisel
No. 987	$\frac{3}{32}$ inch	Rivet Set
No. 988	$\frac{1}{8}$ inch	Round Nose Punch
No. 989	$\frac{3}{16}$ inch	Round Nose Punch
No. 991	$\frac{1}{8}$ inch	Center Punch
No. 992	$\frac{1}{8}$ inch	Cold Chisel
No. 993	$\frac{1}{4}$ inch	Cold Chisel
No. 995	$\frac{1}{64}$ inch	Center Punch
No. 996	$\frac{2}{32}$ inch	Solid Punch
No. 997	$\frac{5}{32}$ inch	Hollow Punch
No. 998		Prick Punch
No. 999	$\frac{2}{32}$ inch	Nail Set

Price, per set, complete..... (ZIKKO) **$4.40**

Packed one in a carton, $5\frac{3}{4}$ x $3\frac{3}{8}$ x $3\frac{1}{8}$ inches.

Weight, $2\frac{1}{8}$ pounds.

Engineers' Plumb Bobs



The bodies of these fine bobs are turned from a solid brass rod. The shank of the hardened steel point runs up through the body and neck and is locked with the nickel plated screw cap at the top, through which the line runs. The long neck not only provides ample space for winding on the line, but it may be used between the steel point and body when a smaller diameter near the point is desirable. Both body and point accurately ground. Nicely finished throughout and each bob supplied with six feet of laid twine.

	Weight		Price, Each
No. 782.	8 ounces	(ZEEGY)	$2.00
No. 783.	12 ounces	(ZEELD)	2.50
No. 784.	16 ounces	(ZEEMF)	3.00

Packed one in a pasteboard box.

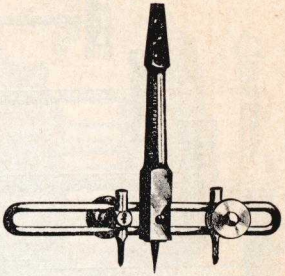
Machinists' Scrapers

These scrapers will be found most useful wherever there is any hand "tooling" of metal to be done. The blades are made of high quality three-cornered tool steel carefully tempered. The ends are curved to a point and ground, giving three keen, convex cutting edges. The blades are highly polished and fitted with comfortable hard wood handles with a polished mahogany finish.

	Blade		Price, Each
No. 778.	2½ inches	(ZEDVE)	$0.60
No. 779.	3½ inches	(ZEDYO)	.70
No. 780.	4½ inches	(ZEEBS)	.90
No. 781.	Set of three sizes	(ZEECT)	2.20

Packed one half dozen of a size or one set to a carton.

Washer and Gasket Cutter
No. 41



This is a very useful device for cutting washers and gaskets of leather, fiber, cloth, or very thin sheet metal. It is strong and well made, capable of cutting any size from 1 inch to 5 inches.

The blades are adjustable as to length of cutting edge as well as to position. They can be easily removed for sharpening or for replacement when worn out.

The tool is made entirely of steel and is nicely polished everywhere except on the end of the shank, which is case hardened. Net weight, 8 ounces.

Price, each ..... (YADUZ) $2.00
Extra Blades, per set ..... .50

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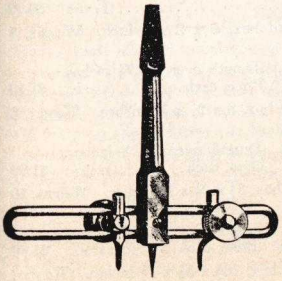
Packed one in a carton, $5\frac{3}{4}$ x $5\frac{3}{4}$ x $1\frac{3}{4}$ inches.
Weight, 10 ounces.

Washer and Gasket Cutter
No. 441



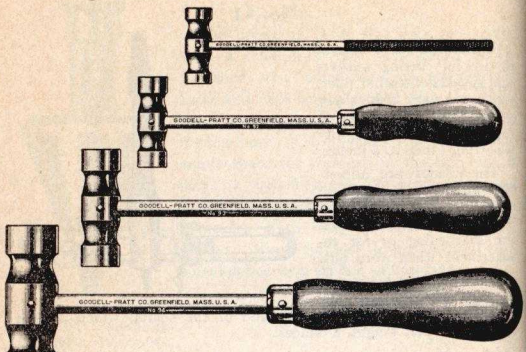
This tool is similar to that described above, but is equipped with an offset blade with which it is possible to cut washers and gaskets of all sizes from $\frac{1}{2}$ to $5\frac{1}{2}$ inches.

Made entirely of steel, all polished except the end of shank. Net weight, 8 ounces.

Price, each .. (YOMSA) $2.30
Extra Blades, per set ..... .65

Packed one in a carton, $5\frac{3}{4}$ x $5\frac{3}{4}$ x $1\frac{3}{4}$ inches.
Weight, 10 ounces.

Brass Hammers



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These brass hammers will be found convenient and practical for use on finished work, or in any place where a soft hammer is desired. The brass heads and steel shanks are both nicely polished, and the three largest sizes have hard wood handles with a mahogany lacquer finish.

No. 91. Head, $\frac{1}{2}$ x $1\frac{1}{2}$ inches. Steel handle with knurled grip. Length over all, $5\frac{1}{2}$ inches. Net weight, 2 ounces. Price, each..... (YAURN) $0.90

Packed one in a pasteboard box, 6 x 2 x $\frac{3}{4}$ inch. Weight, 3 ounces.

No. 92. Head, $\frac{9}{16}$ x $1\frac{3}{4}$ inches. Length over all, $7\frac{1}{4}$ inches. Net weight, 4 ounces. Price, each..... (YAUXT) $1.10

Packed one in a pasteboard box, 8 x $2\frac{1}{4}$ x $1\frac{1}{4}$ inches. Weight, 6 ounces.

No. 93. Head, $\frac{3}{4}$ x $2\frac{1}{4}$ inches. Length over all, 8 inches. Net weight, 8 ounces. Price, each..... (YAVEN) $1.30

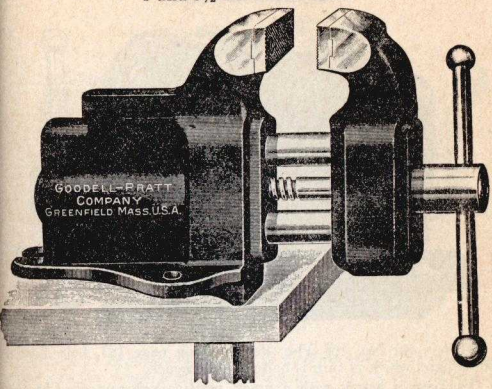
Packed one in a pasteboard box, $8\frac{1}{2}$ x $2\frac{1}{2}$ x $1\frac{1}{4}$ inches. Weight, 10 ounces.

No. 94. Head, 1 x 3 inches. Length over all, 10 inches. Net weight, 16 ounces. Price, each..... (YAVMA) $1.80

Packed one in a pasteboard box, $10\frac{1}{2}$ x $3\frac{1}{4}$ x $1\frac{1}{2}$ inches. Weight, $1\frac{1}{4}$ pounds.

Mechanics' Vises

3 and 3½ Inch Steel Jaws



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Great strength and rigidity have been built into these vises through the use of the twin guide rod construction which we originated. Two 1⅛-inch round steel rods are solidly fixed in the movable jaw and run in long, reamed holes in the main casting. The large steel feed screw with accurately machined square thread runs between these rods.

This construction gives very smooth, easy action, lasting rigidity to the movable jaw and tremendous strength.

The jaws are shaped for strength and general all-round work. They have tough steel faces held in place by taper-headed screws that readily take up any looseness. These jaw faces are serrated to give a good grip and then case hardened.

All iron parts are finished in glossy red and black enamel. All exposed steel parts are nicely polished.

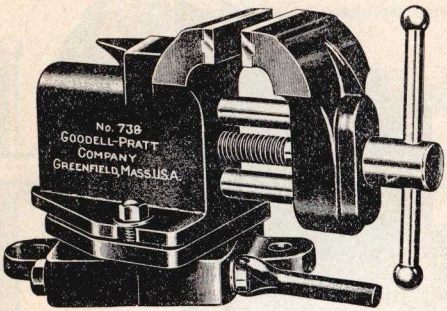
	Jaw Faces Inches	Open Inches	Weight, Pounds		
No. 370	3 x 1¼	4⅛	40	(YOBIK)	$16.00
No. 523	3½ x 1¼	4⅛	41	(YUCNA)	17.00

Packed one in a wooden case, 16 x 10½ x 8¾ inches.

Shipping weights, 49 and 50 pounds respectively.

No. 738 Swivel Bench Vise

2½ Inch Steel Jaws



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This is our No. 168 Vise, described on page 187, bolted to a swivel base, which in turn is bolted to the bench.

The base is heavy, with a quick, positive lock controlled by the lever handle shown, allowing the vise to be swung to and locked at any position instantly.

The jaw faces are made of very tough steel, 2½ x ¾ inch, scored and case hardened. They are held in position by taper-headed screws. Jaws open 2½ inches.

Net weight, 16 pounds.

Price, each..... (ZAVAH) **$10.50**

Packed one in a wooden case, 12½ x 9 x 7¼ inches.
Weight, 20 pounds.

No. 737 Swivel Vise Base

This is the swivel base only, as shown above, fitted with the necessary screws for attaching without alteration our Nos. 168 and 709 Vises shown on page 187.

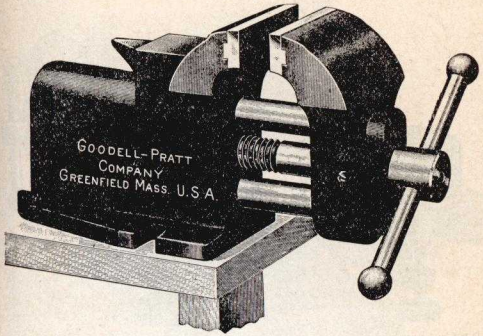
Net weight, 6 pounds.

Price, each..... (ZAUTL) **$3.30**

Packed one in a carton, 7¾ x 4½ x 1¾ inches.
Weight, 6¼ pounds.

No. 168 Bench Vise

2½ Inch Steel Jaws



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This is an excellent bench vise of medium size. The steel feed screw and two ⅝-inch steel guide rods give it rigidity and the careful fitting makes it work smoothly and grip tightly. The special thread on the feed screw was designed to give it great strength.

The jaw faces are made of a very tough steel, 2½ x ¾ inch. They are scored and case hardened. The taper-headed screws by which the jaws are fastened to the vise will take up any looseness. Jaws open 2¼ inches. Net weight, 10 pounds.

Iron parts are finished in red and black enamel; steel parts are polished.

Price, each..... (YEGYJ) $6.70

Packed one in a carton, 9¾ x 6½ x 4¼ inches.

Weight, 11 pounds.

No. 709 Bench Vise

2½ Inch Plain Jaws

This vise is exactly the same as No. 168 described above, except that the jaws are plain gray iron. Net weight, 10 pounds.

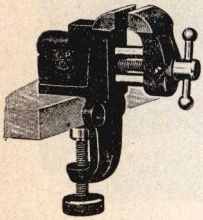
Price, each..... (ZAPID) $4.40

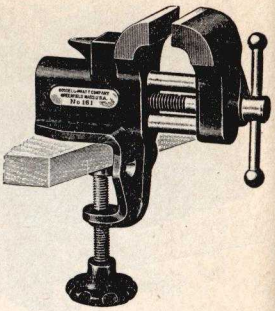
Packed one in a carton, 9¾ x 6½ x 4¼ inches.

Weight, 11 pounds.

Bench Vises

1 to 2½ Inch Jaws





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No. 160 **No. 161**

These bench vises are different in design and general appearance from any other small tools of this character. They are constructed to meet the demand for a small vise of better construction than those which have previously been made.

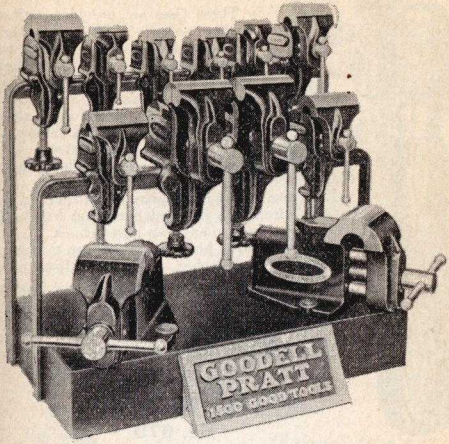
These vises are operated by an accurately cut-steel feed screw. Two steel guide rods are provided to insure rigidity. All parts are carefully fitted so that the jaws are easily operated, but without lost motion. After the vise is completely assembled, the jaws are machined so that they will meet accurately.

All steel parts are polished and all iron parts are finely finished in red and black enamel.

	Width of Jaws	Jaws Open	Net Weight		Price, Each
No. 160	1 inch	1½ inches	1⅜ pounds	(YEGAC)	$1.70
No. 663	1½ inches	1½ inches	2 pounds	(ZAGIT)	2.00
No. 161	2 inches	2 inches	3⅜ pounds	(YEGCA)	2.40
No. 708	2¼ inches	2 inches	3¾ pounds	(ZAPFO)	2.60
No. 664	2½ inches	2½ inches	7¼ pounds	(ZAGOV)	4.00

Each vise is packed in a carton.

No. 697 Vise Assortment



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This assortment consists of the following vises:

2 No. 160—1 inch	2 No. 663—1½ inch	1 No. 168—2½ inch
2 No. 161—2 inch	2 No. 664—2½ inch	1 No. 709—2½ inch
	2 No. 708—2½ inch	

These are packed in an individual wooden case with the attractive display stand shown in the cut. The stand holds the entire assortment; the ten smaller vises are clamped to the cross rods with their own clamps, while the Nos. 709 and 168 vises are fastened to the bottom of the stand with stove bolts. The holes for setting these two vises are already drilled.

The stand is very sturdily built of wood with a large base, measuring 9 x 16 inches, to prevent any possibility of overturning. To this base are attached the two racks that hold the smaller vises and the sign. The entire stand, with exception of the sign, which is polished aluminum with a red enamel background, is nicely black enameled.

Price, complete, with display stand..... (ZANED) **$37.00**

Packed in a wooden case, 20¾ x 13¾ x 12¾ inches.
Shipping weight, 85 pounds.

Hand Vises

Parallel Jaws

These vises are provided with a double screw, geared together, insuring parallel jaw faces up to extreme capacity. This makes possible a firmer hold than could be secured by the use of a single screw.

The jaws are drop-forged steel with the faces scored and hardened. All other working parts are made of steel. The jaws are tightened by means of a sliding handle that will be found convenient.

Each vise has a taper square shank that can be removed from the polished hardwood handle if desired, and held in any two-jawed chuck.

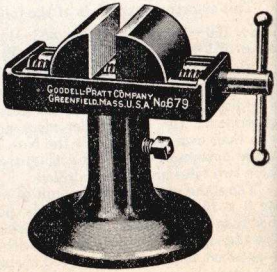
Jaw faces are $1\frac{3}{8}$ x $\frac{3}{8}$ inches. Jaws open $1\frac{1}{2}$ inches. Length over all, $8\frac{1}{2}$ inches. Net weight, $1\frac{1}{2}$ pounds.

No. 97 Polished and nickel plated (YAWNA) $4.70
No. 98 Black finish..... (YAWOR) 4.40

Packed one in a carton, $9\frac{1}{4}$ x 5 x $1\frac{3}{4}$ inches. Weight, $1\frac{1}{2}$ pounds.

Swivel Bench Vise

No. 679



This vise will be found most convenient for holding material or parts for light operations at the bench. It will swing freely or can be solidly fixed by tightening the set screw at the side. The same set screw can be used to vary the height from $5\frac{1}{2}$ to $7\frac{1}{4}$ inches.

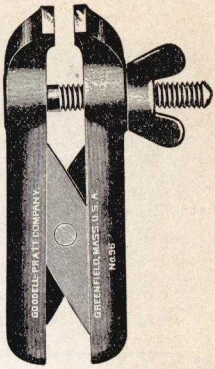
The vise jaws are both movable, opening or closing equally by a right and left hand screw. The jaws are $2\frac{1}{2}$ inches wide and will open 2 inches. Diameter of base, $4\frac{3}{4}$ inches. Attractively finished in polished steel, black and red enamel.

Net weight, 5 pounds.

Price, each..... (ZAKZO) $4.40

Packed one in a carton.

Hand Vise
No. 96
Parallel Jaws



This hand vise is provided with parallel jaws, a form of construction that, although it adds to the cost, greatly increases the convenience and utility of the tool.

The jaws are drop forged from steel bars. The jaw faces are scored and case hardened. Jaw faces are $1\frac{3}{16}$ inches long and $\frac{3}{8}$ inch wide. They will open $1\frac{1}{4}$ inches and are always parallel whether open or closed.

The entire tool has a mottled finish except the edges of the jaws, which are polished. Length, $4\frac{1}{2}$ inches. Net weight, 12 ounces.

Price, each..... (YAVYS) $3.10

Packed one in a carton, $5\frac{1}{4}$ x 3 x $1\frac{1}{4}$ inches.
Weight, 14 ounces.

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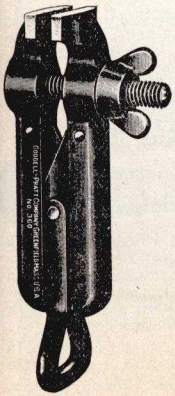


Lineman's Hand Vise
No. 360
Parallel Jaws

This tool is exactly the same as the hand vise shown above, except that it has a ring to hold it on a lineman's belt.

The jaws are drop-forged steel, with jaw faces scored and case hardened. Jaws are $1\frac{3}{16}$ inches by $\frac{3}{8}$ inch and open $1\frac{1}{4}$ inches. They are always parallel.

This tool is finished entirely in black except the edges of the jaws, which are polished. Length, 6 inches. Net weight, 14 ounces.

Price, each..... (YIZUG) $3.30

Packed one in a carton, $6\frac{1}{4}$ x 3 x $1\frac{1}{4}$ inches.
Weight, 1 pound.

Pin Vises

Chuck Patented August 13, 1895

The handles are polished hard wood, shaped to fit the hand nicely. They have holes drilled through in order that wires or small rods of any length may be held.

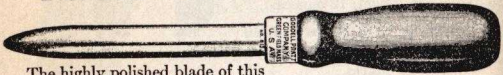
The chucks are all steel with three hardened jaws. They have a very firm grip. The chuck shells are polished and nickel plated.

	Capacity	Net Weight		Price, Each
No. 104	0 to $\frac{5}{32}$ inch	4 ounces	(YAYIR)	$1.10
No. 106	0 to $\frac{1}{4}$ inch	6 ounces	(YAYME)	1.30

Packed one in a carton.

No. 813 Oval Blade Burnisher

PAGE 192



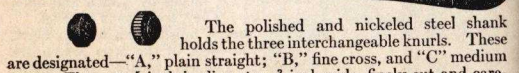
The highly polished blade of this tool is oval in shape, with a nicely pointed end. It is 4 inches long, carefully hardened, and set in a comfortable polished hardwood handle protected by a nickel-plated ferrule.

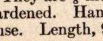
The shape of the blade, with its smooth, convexed point, makes it possible to do a great variety of fine burnishing with this tool. Also makes a fine scraper steel. Length, 7¾ inches. Net weight, 3 ounces.

Price, each..... (ZEJDO) $0.70

Packed one half dozen in a carton. Weight, 1¼ pounds.

No. 95 Hand Knurling Tool

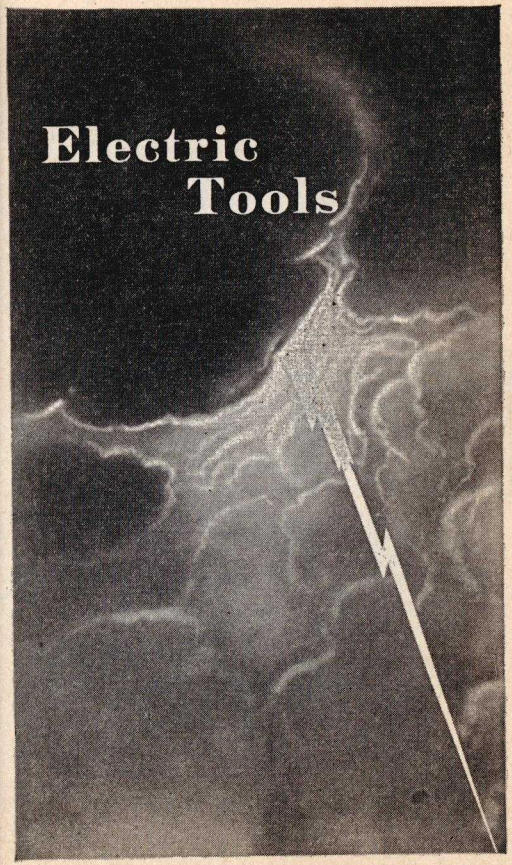




The polished and nickeled steel shank holds the three interchangeable knurls. These are designated—"A," plain straight; "B," fine cross, and "C" medium cross. They are $\frac{5}{8}$ inch in diameter, $\frac{3}{8}$ inch wide, finely cut and carefully hardened. Handle is hollow, with screw cap, and holds knurls not in use. Length, 9½ inches. Net weight, 7 ounces.

Price of set, complete with 3 knurls..... (YAVSY) $2.75
Extra knurls, each..... .55

Packed one set in a carton, 10 x 1¾ x 1½ inches. Weight, 9 ounces.



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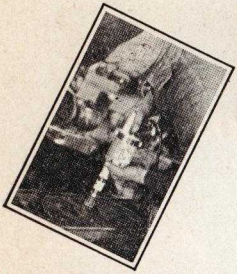

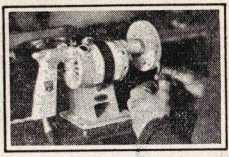

The All-Round ¼ Inch General Purpose Electric Drill

The many new and exclusive features incorporated in this fine drill give greater efficiency, service and dependability.

It is superior in power and stamina combined with light weight, excellent balance and a very wide range of usefulness.

Beside its many uses as a portable tool, the stands shown on page 196 make simple work of bench drilling, grinding, polishing, buffing, scratch brushing, sawing, sanding and many other operations. The method of mounting wheels and other accessories directly on the drill spindle puts the load close up to the two ball bearings with which the spindle is equipped.

It is the ideal ¼-inch drill for factories, machine shops, service stations, garages, mechanics, carpenters and home craftsmen.

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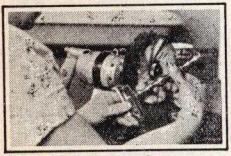
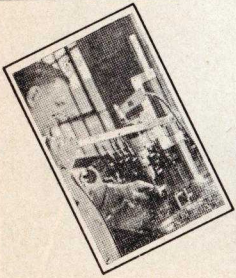
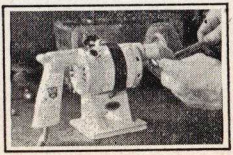
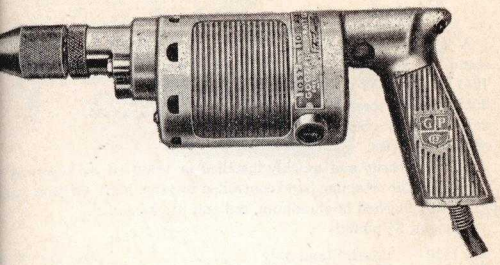








¼-Inch General Purpose Drill

Patents applied for. Design Patent No. 80156

A light, powerful drill of ¼-inch capacity embodying every desirable feature in a drill of this size. Stands on the following page make a useful bench machine.

MOTOR—Westinghouse Universal type for alternating or direct current.

SPEED—No load, 1700 R.P.M. Full load, 850 R.P.M.

CAPACITY—0 to ¼ inch in steel.

SPINDLE—Double ball bearing. GEARS—Hardened alloy steel.

CHUCK—All-steel, three-jawed, hand-operated.

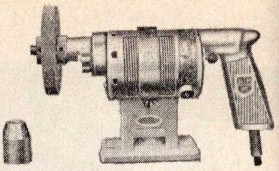
EQUIPMENT—Twelve feet of rubber-covered cable with unbreakable rubber plug.

Length, 11¾ inches. Weight, 4¼ pounds.

			Price, Each
No. 1051	110 Volts	(ZOZHY)	$24.00
No. 2051	220 Volts	(ZOZID)	24.00

Packed one in a carton, 12¼ x 5½ x 3½ inches.
Weight, 6 pounds.

No. 1110 Bench Stand



A sturdy, trim stand for Drills Nos. 1051, 2051, 1052 and 2052. Can be screwed or clamped to a bench or held in a vise.

Drill is easily and quickly installed or removed by loosening tightening the retaining band controlled by large hand screw at bac

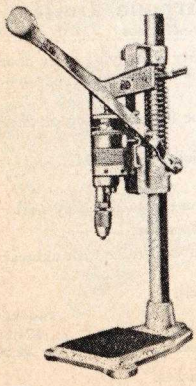
Nicely finished in aluminum, red and black enamel.

Weight, 3½ pounds.

No. 1110	Bench Stand only	(ZOYMT)	$1.
No. 1110A	Bench Stand with 4-inch grinding wheel and knurled collar	(ZOYNV)	3.
No. 1110B	Clamp for holding stand to bench	(ZOYOD)	1.

Packed one in a carton.

No. 1105 Drill Stan

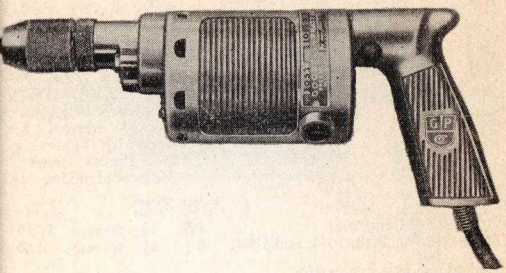


Converts Drills Nos. 1051, 205 1052 and 2052 into a sturdy pow bench drill. Powerful lever feed.

Height above bench, 25 inches.
Diameter of column, 1½ inches.
Size of finished table, 6 x 7 inch
Bench space required, 8½ x inches.
Depth of feed, 3½ inches.
Chuck to table, 10½ inches.
Height of head adjustable.
Drills to center of a 10-inch circ
Compensating spring.
Weight, 22 pounds.

No. 1105 Drill Stand (ZOYLS) $12

Packed one in a wooden ca
26½ x 10 x 11 inches.
Weight, 35 pounds.



¼-Inch High Speed Drill

Patents applied for. Design Patent No. 80156

A fine drill for fast production drilling in non-ferrous metals such as aluminum, brass, copper, bronze, lead, zinc, and also in hard and soft woods, fibre and similar materials. High speed also desirable for grinding, polishing, buffing, etc.

MOTOR—Westinghouse Universal type for alternating or direct current.

SPEED—No load, 4000 R.P.M. Full load, 2000 R.P.M.

CAPACITY—0 to ¼ inch in non-ferrous metal; 0 to ⅜ inch in wood.

SPINDLE—Double ball bearing. GEARS—Hardened alloy steel.

CHUCK—All-steel, three-jawed, hand-operated.

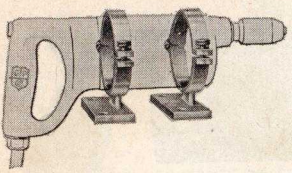
EQUIPMENT—Twelve feet of high-grade rubber-covered cable with non-breakable rubber plug.

Length, 11¾ inches. Weight, 4¼ pounds.

			Price, Each
No. 1052	110 Volts	(ZUJVY)	$25.00
No. 2052	220 Volts	(ZUJYV)	25.00

Packed one in a carton, 12¼ x 5½ x 3½ inches.
Weight, 6 pounds.

Bench Clamps



When screwed to a bench these clamps make a very rigid, horizontal stand for holding drills Nos. 1042, 2042, 1043, 2043, 1044 and 2044 on pages 199, 201 and 202. Drills easily and quickly screwed in stand by tightening the thumb screws. Made of aluminum.

	For Drills	Height, Inches	Weight, Pounds		Price, per Pair
No. 1010	1051 and 2051	$4\frac{9}{16}$	$1\frac{1}{8}$	(ZOYDO)	$2.10
No. 1011	1043, 2043, 1044, and 2044	$5\frac{5}{8}$	$1\frac{1}{2}$	(ZOYEB)	2.80

Packed one pair in a carton.

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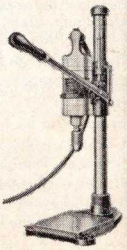
No. 1005 Drill Stand

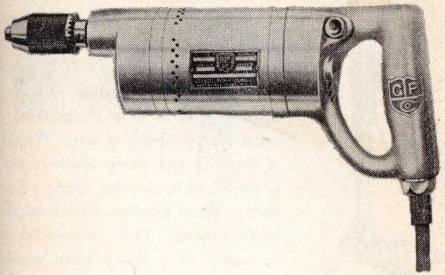


Designed for $\frac{1}{4}$-inch heavy duty drills, Nos. 1042, 2042, and 3042, on the following page. Drill slips into position very easily and is rigidly held in position by tightening a wing nut. A long, comfortably handled lever controls the feed. Depth of feed may be set to any point up to $3\frac{1}{8}$ inches. Weight of drill and clamp bracket compensated for by a spring ingeniously located inside the column.

Height above bench, 25 inches.
Diameter of column, $1\frac{1}{2}$ inches.
Size of finished table, 6 x 7 inches.
Bench space required, $8\frac{1}{2}$ x 12 inches.
Depth of feed, $3\frac{1}{8}$ inches.
Extreme distance between chuck and table, $11\frac{3}{4}$ inches.
Drills to center of a 9-inch circle.
Net weight, $18\frac{3}{4}$ pounds.

Price, each..... (ZOWUD) $12.00

Packed one in a wooden case, $26\frac{1}{2}$ x $11\frac{1}{4}$ x $9\frac{1}{2}$ inches.
Shipping weight, 28 pounds.



¼-Inch Heavy Duty Drill

Designed, powered and guaranteed for continuous ¼-inch drilling steel or the equivalent.

MOTOR—Universal type for alternating or direct current.

SPEED—No load, 1800 R.P.M. Full load, 750 R.P.M.

CAPACITY—0 to ¼ inch in steel.

SPINDLE—Ball bearing. GEARS—Hardened alloy steel.

CHUCK—All-steel, three-jawed, key-operated.

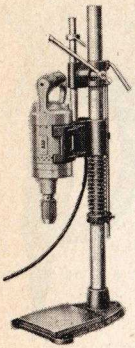
EQUIPMENT—Twelve feet of high-grade rubber-covered cable with ber plug.

Length, 13⅜ inches. Weight, 6 pounds.

			Price, Each
. 1042	110 Volts	(ZUABI)	$36.00
. 2042	220 Volts	(ZUASO)	36.00
. 3042	32 Volts	(ZUZUG)	36.00

Packed one in a carton, 14 x 8¾ x 4¾ inches.
Weight, 9½ pounds.

Drill Stand
No. 1006



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Drills Nos. 1043, 2043, 1044, 2044 and 3044 on pages 201 and 202 clamp into this substantial stand without the use of any tools. A lever operates through a rack and pinion which provides a convenient feed with 50% more power than is obtainable with the usual type of lever feed. Adjustable collar controls depth of hole. Weight of the drill and clamp bracket compensated for by suitable spring. The feed and drill brackets are adjustable on the column. They are locked to it by means of a heavy lever handle screw.

Height above bench, 33 inches.

Diameter of upright column, $1\frac{1}{2}$ inches.

Size of finished table, 6 x 7 inches.

Bench space required, $8\frac{1}{2}$ x 12 inches.

Extreme distance between chuck and table, $15\frac{1}{2}$ inches.

Depth of feed, $3\frac{5}{8}$ inches.

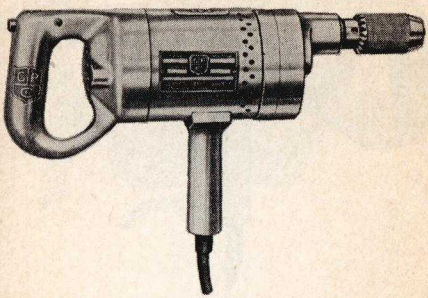
Drills to center of $10\frac{3}{4}$-inch circle.

Net weight, 27 pounds.

Price, each..... (ZOWTA) $25.00

Packed one in a wooden case, $36\frac{1}{2}$ x $10\frac{1}{4}$ x 9 inches.

Shipping weight, 42 pounds.



3/8-Inch Heavy Duty Drill

A powerful, nicely balanced drill designed and motored for continuous ⅜-inch drilling in steel.

MOTOR—Universal type for alternating or direct current.

SPEED—No load, 1100 R.P.M. Full load, 550 R.P.M.

CAPACITY—0 to ⅜ inch in steel.

SPINDLE—Ball bearing. GEARS—Hardened alloy steel.

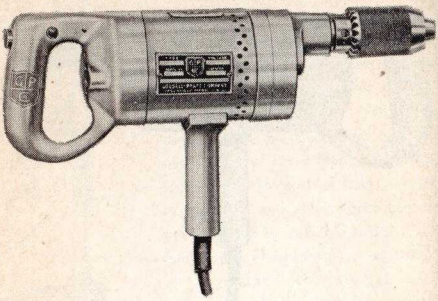
CHUCK—All-steel, three-jawed, key-operated.

EQUIPMENT—Level set flush in top of housing. Twelve feet of high-grade rubber-covered cable with rubber plug.

Length, 15⅜ inches. Weight, 11 pounds.

			Price, Each
No. 1043	110 Volts	(ZUAGM)	$52.00
No. 2043	220 Volts	(ZUASZ)	52.00

Packed one in a wooden case, 18½ x 12 x 7 inches.
Weight, 19 pounds.



1/2-Inch Light Duty Drill

A fine, general purpose drill for ½-inch drilling in steel with a speed that permits fast performance on smaller sizes.

MOTOR—Universal type for alternating or direct current.

SPEED—No load, 700 R.P.M. Full load, 400 R.P.M.

CAPACITY—0 to ½ inch in steel.

SPINDLE—Ball bearing. GEARS—Hardened alloy steel

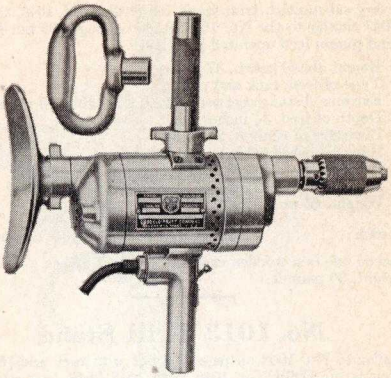
CHUCK—All-steel, three-jawed, key-operated.

EQUIPMENT—Level set flush in top of housing. Fifteen feet of high-grade rubber-covered cable with rubber plug.

Length, 15⅝ inches. Weight, 12 pounds.

			Price, Each
No. 1044	110 Volts	(ZUAHN)	$53.00
No. 2044	220 Volts	(ZUAWD)	53.00
No. 3044	32 Volts	(ZOZYH)	53.00

Packed one in a wooden case, 18½ x 12 x 7 inches.
Weight, 19½ pounds.



-Inch and 9/16-Inch Standard Drills

Two sturdy, powerful drills for all-round work in steel up to their d capacities.

MOTOR—Universal type for alternating or direct current.

SPEED—No load, 650 and 540 R.P.M. Full load, 400 and 330 M. respectively.

CAPACITY—0 to $\frac{1}{2}$ and 0 to $\frac{9}{16}$ inch in steel respectively.

SPINDLE—Ball bearing. GEARS—Hardened alloy steel.

CHUCK—All-steel, three-jawed, key-operated.

EQUIPMENT—Interchangeable grip handle and breast plate. een feet of rubber-covered cable with rubber plug.

Length, 18½ inches. Weights, 16 and 19 pounds.

	Capacity			Price, Each
1045	$\frac{1}{2}$" Standard	110 Volts	(ZUAJP)	$60.00
2045	$\frac{1}{2}$" Standard	220 Volts	(ZUBAH)	60.00
1047	$\frac{9}{16}$" Standard	110 Volts	(ZUANT)	64.00
2047	$\frac{9}{16}$" Standard	220 Volts	(ZUBIK)	64.00

Packed one in a wooden case, 19 x 17 x 8 inches.

Weights, 28½ and 31½ pounds.

See following page for Drill Stands.

No. 1007 Drill Stand

A very substantial, trim stand for Drills Nos. 1045, 2045, 1047, and 2047 similar to the No. 1008 Stand on page 206 but fitted with rack and pinion feed operated by a lever.

Height above bench, 37 inches.
Type of feed, rack and pinion.
Extreme distance between chuck and table, 15 inches.
Depth of feed, 3⅞ inches.
Diameter of column, 2 inches.
Size of finished table, 12 x 11 inches.
Bench space required, 12½ x 18 inches.
Drills to center of 10-inch circle.
Weight, 65 pounds.

Price, each.... (ZOWZE) $32.00

Packed one in a wooden case, 35⅝ x 15 x 7 inches.
Weight, 90 pounds.

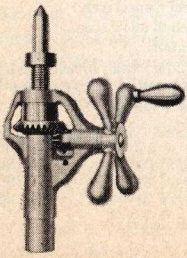
No. 1013 Drill Stand

PAGE 204 Similar to No. 1008 on page 206 but with rack and pinion feed accommodating Drills Nos. 1046, 2046, 1048, 2048, 1049, and 2049 on the following pages.

Price, each..... (ZOYIC) $32.00

Packed one in a wooden case, 35⅝ x 15 x 7 inches.
Weight, 90 pounds.

No. 1009 Screw Feed



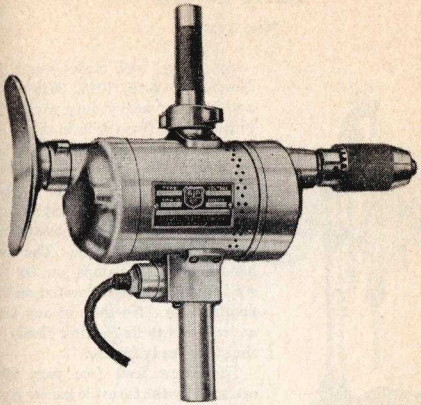
A powerful screw feed for Drills Nos. 1046, 1048, 1049, 2046, 2048, and 2049.

Carefully cut-steel gears and feed screw. Very useful on heavy work with an "old man."

Length overall, 9 inches.
Length of feed, 3⅞ inches.
Net weight, 2¾ pounds.

Price, each.... (ZOYBE) $18.00

Packed one in a carton.



½-Inch Heavy Duty Drill

For heavy, continuous, ½-inch drilling in steel and other heavy-duty work requiring a wealth of power and stamina.

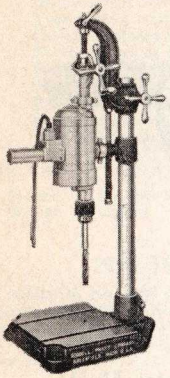
MOTOR—Universal type for alternating or direct current.
SPEED—No load, 600 R.P.M. Full load, 360 R.P.M.
CAPACITY—0 to ½ inch in steel.
SPINDLE—Ball bearing. GEARS—Hardened alloy steel.
CHUCK—All-steel, three-jawed, key-operated.
EQUIPMENT—Interchangeable grip handle and breast plate. Fifteen feet of high-grade rubber-covered cable with rubber plug.
Length, 19⅞ inches. Weight, 21 pounds.

			Price, Each
No. 1046	110 Volts	(ZUAMS)	$74.00
No. 2046	220 Volts	(ZUBHA)	74.00

Packed one in a wooden case, 19 x 17 x 8 inches.
Weight, 36 pounds.
Drill Stands for these drills will be found on the following page.

Drill Stand

No. 1008



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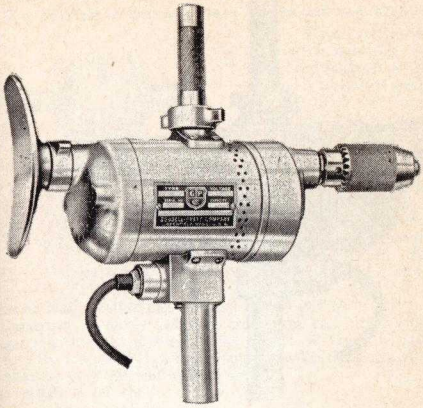
A strong, well-made stand for Nos. 1046, 2046, 1048, 2048, 1049, and 2049 for heavy duty work. To install any of these drills in the stand, the end handle and side handle are removed. The screw feed device, described below, is inserted in place of the end handle and locked into the stand by means of the hand clamp screw in the top arm. The side handle bracket clamps on to the stud for this purpose located on the floating arm. No tools of any kind are required to fix the drill firmly in the stand ready for use.

The screw feed (see page 204) operated by the turnstile handle gives greater pressure than can be applied by the ordinary lever feed. The pressure ratio is approximately 150 to 1, which is entirely sufficient for $\frac{7}{8}$-inch drilling in steel.

Length of upright column, 31 inches.
Height above bench, 37 inches.
Size of table, 12 x 11 inches.
Bench space required, $12\frac{1}{2}$ x 18 inches.
Extreme distance between chuck and table, 14 inches.
Depth of feed, $3\frac{7}{8}$ inches.
Drills to center of 10-inch circle.
Net weight, 67 pounds.

Price, each ..... (ZOYAZ) $50.00

Packed one in a wooden case, $35\frac{5}{8}$ x 15 x 7 inches.
Weight, 95 pounds.



5/8-Inch Heavy Duty Drill

For heavy duty in steel at full capacity. A big, powerful drill for heavy duty service.

MOTOR—Universal type for alternating or direct current.

SPEED—No load, 550 R.P.M. Full load, 310 R.P.M.

CAPACITY—0 to $\frac{5}{8}$ inch in steel.

SPINDLE—Ball bearing. GEARS—Hardened alloy steel.

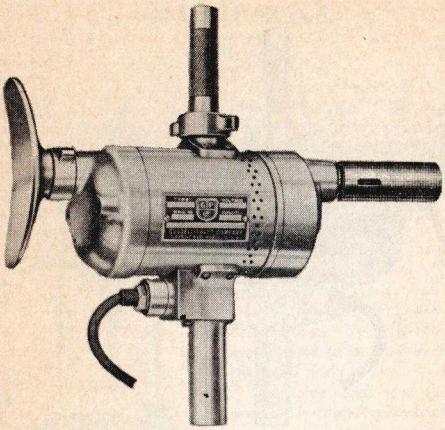
CHUCK—All-steel, three-jawed, key-operated.

EQUIPMENT—Interchangeable grip handle and breast plate. Fifteen feet of high-grade rubber-covered cable with rubber plug.

Length, 19 inches. Weight, 23 pounds.

			Price, Each
No. 1048	110 Volts	(ZUARY)	$78.00
No. 2048	220 Volts	(ZUBJE)	78.00

Packed one in a wooden case, 19 x 17 x 8 inches.
Weight, 36 pounds.



7/8-Inch Standard Drill

Designed and powered for continuous drilling in steel and other work requiring equal power. Fitted with a No. 2 Morse Taper Socket in place of a chuck.

MOTOR—Universal type for alternating or direct current.

SPEED—No load, 440 R.P.M. Full load, 260 R.P.M.

CAPACITY—0 to 7/8 inch in steel.

SPINDLE—Ball bearing. GEARS—Hardened alloy steel.

SOCKET—No. 2 Morse Taper.

EQUIPMENT—Interchangeable grip handle and breast plate. Fifteen feet of high-grade rubber-covered cable with rubber plug.

Length, 19 inches. Weight, 23 pounds.

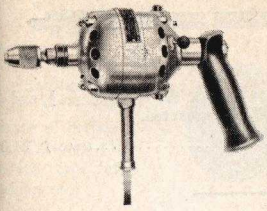
			Price, Each
No. 1049	110 Volts	(ZUBLO)	$85.00
No. 2049	220 Volts	(ZUBOL)	85.00

Packed one in a wooden case, 19 x 17 x 8 inches.

Weight, 37 pounds.

High Speed Electric Hand Drills

For Drilling in Soft and Hard Woods and Soft Metals



No. 1038

These drills perform with lightning speed in hard and soft woods and soft metals on work up to $\frac{3}{16}$ inch in diameter. They are light and easily controlled, making them extremely economical tools to use wherever many small holes have to be drilled. The motors are of the Universal type for either alternating or direct current. They are furnished for either 110 or 220 volts.

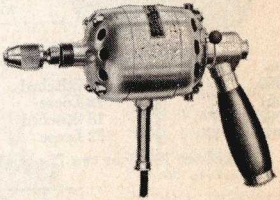
The no load speed of the motors is 15000 R.P.M.

Frames are of nicely polished aluminum and the handles are mahogany finished hard wood. The handle on the Nos. 1039 and 2039 is of the magazine type and is supplied with eight straight fluted drills that are very efficient at high speeds.

PAGE 209

The switch is off the toggle type and is quickly and easily controlled by the thumb.

The spindle is equipped with a ball thrust bearing. The chucks are all steel, with three hardened jaws for holding round shanks.



No. 1039

EQUIPMENT — The $\frac{1}{8}$-inch capacity drills are supplied with five drill points $\frac{1}{16}$ to $\frac{1}{8}$ inch in diameter and the $\frac{3}{16}$-inch drills with eight drill points $\frac{1}{16}$ to $\frac{11}{64}$ inch in diameter. Each drill is equipped with $7\frac{1}{2}$ feet of flexible cord and a plug.

Nos. 1038 and 2038 are $9\frac{1}{4}$ inches long and weigh $2\frac{1}{4}$ pounds.
Nos. 1039 and 2039 are $9\frac{3}{4}$ inches long and weigh $3\frac{1}{4}$ pounds.

	Capacity			Price, Each
No. 1038	0 to $\frac{1}{8}$ inch	110 Volts	(ZOYZA)	$15.00
No. 2038	0 to $\frac{1}{8}$ inch	220 Volts	(ZOZEC)	15.00
No. 1039	0 to $\frac{3}{16}$ inch	110 Volts	(ZOZAB)	18.00
No. 2039	0 to $\frac{3}{16}$ inch	220 Volts	(ZOZFO)	18.00

Packed one in a carton.

No. 903 Wire Valve Guide Brushes

Made of durable wire for use in electric drills to remove carbon from automobile valve guides. Made in 7 sizes as follows: $\frac{5}{16}$, $\frac{11}{32}$, $\frac{3}{8}$, $\frac{13}{32}$, $\frac{7}{16}$, $\frac{1}{2}$, and $\frac{9}{16}$ inch diameter. Be sure to specify sizes wanted.

Price, each..... (ZIACY) $1.00

Packed one in a carton.

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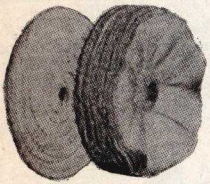
Buffing Wheels



For use with the arbors on pages 163 and 164. Made of the best grade of cotton cloth in both loose and stitched types. Several stitched sections can be used on the arbor to secure a wide face.

No.	Diam.	Hole	Ply	Approximate Thickness		Price, Each
960	5″	$\frac{1}{2}$″	18 Stitched	$\frac{3}{16}$″	(ZIHUJ)	$0.20
961	5″	$\frac{1}{2}$″	72 Loose	1″	(ZIHYK)	.60
962	7″	$\frac{1}{2}$″	18 Stitched	$\frac{3}{16}$″	(ZIJAF)	.25
963	7″	$\frac{1}{2}$″	72 Loose	1″	(ZIJEG)	.90

Packed ten 18-ply or two 72-ply wheels to a box.

Grinding Wheels

These are excellent wheels made of very hard, high-grade abrasive material.

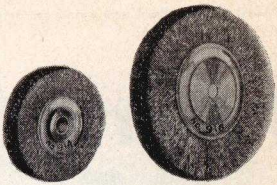
No.	Diam.	Face	Hole		Price, Each
930	4″	x $\frac{1}{2}$″	x $\frac{1}{2}$″	(ZIEVS)	$0.90
931	6″	x $\frac{1}{2}$″	x $\frac{1}{2}$″	(ZIEWT)	1.50
932	6″	x $\frac{3}{4}$″	x $\frac{1}{2}$″	(ZIFAB)	2.00

Specify whether fine or coarse grit is wanted.

Packed two in a carton.

Heavy Duty Wire Brush Wheels

These are specially well made wheels with strong bors and stiff, rable wire for avy duty service. seful for quick moval of carbon paint from metal, ughing tires for itching, etc.



	Diam.	Face	Hole		Price, Each
o. 914	4″	$\frac{5}{8}$″	$\frac{1}{2}$″	(ZICZE)	$1.25
o. 915	4″	1″	$\frac{1}{2}$″	(ZIDAZ)	2.25
o. 916	6″	1″	$\frac{1}{2}$″	(ZIDBE)	3.00

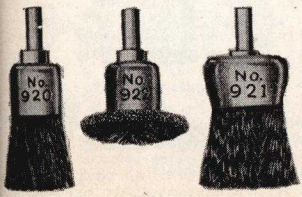
The six-inch wheels are equipped with interchangeable bushings. hey will be sent with $\frac{1}{2}$-inch holes unless otherwise specified.

Packed one in a carton.

PAGE 211

Arbors for operating these brushes will be found on pages 163 and 64.

Tempered Steel Wire Brushes

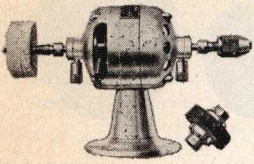


Made of a high grade of tempered music wire. Used in the chuck of an electric drill they remove carbon, rust, and other deposits very rapidly. They are fitted with $\frac{1}{4}$-inch round shanks.

			Price, Each
Jo. 920	$\frac{7}{8}$″ Straight End	(ZIDIC)	$1.50
Jo. 921	1″ Straight End	(ZIDOD)	1.75
Jo. 922	Mushroom	(ZIDUF)	1.75

Packed one in a carton.

Motor-Driven Polishing and Grinding Heads



No. 1060

These high-speed stands will be found most useful for a great variety of light work. They are well built and nicely finished and will prove entirely satisfactory for the classes of work for which they are designed.

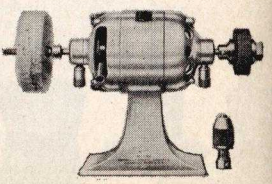
Motors are of the Universal type for alternating or direct current at either 110 or 220 volts. Their approximate no load speed is 15000 R.P.M.

PAGE 212

Each machine is equipped with a taper thread spindle, an arbor and a three-jawed chuck with 0 to $\frac{5}{32}$ inch capacity. A 2 x $\frac{1}{2}$ inch buffing wheel is supplied with No. 1060, and a 3 x $\frac{1}{2}$ inch buff with No. 1061. A $1\frac{3}{4}$-inch grinding wheel is supplied with each stand.

A flexible cord, $7\frac{1}{2}$ feet long, with plug, is regularly supplied.

Small stands are 9 inches long and weigh 3 pounds, while the larger are $9\frac{3}{4}$ inches long and weigh $4\frac{1}{2}$ pounds.



No. 1061

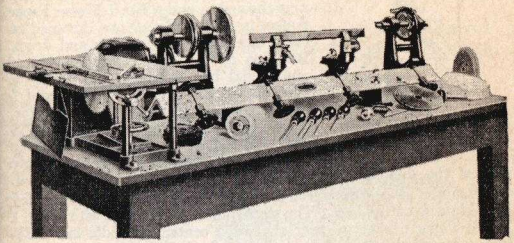
				Price, Each
No. 1060	110 Volts	1-30 H.P.	(ZUECK)	$18.00
No. 2060	220 Volts	1-30 H.P.	(ZUEHA)	18.00
No. 1061	110 Volts	1-10 H.P.	(ZUEGN)	21.00
No. 2061	220 Volts	1-10 H.P.	(ZUEJO)	21.00

Packed one in a carton.

No. 1931 Motor-Driven Workshop

"The Workshop Standard of the World"

With Three-Speed Ball-Bearing Lathe and Ball-Bearing Saw Table



This new workshop sets an entirely new standard for this class of equipment. Its excellent design, rugged construction, and large capacity make a combination that is satisfactory for production work or for the craftsman who wants to build the hundreds of really practical things that have been impossible heretofore on outfits of lesser capabilities. PAGE 213

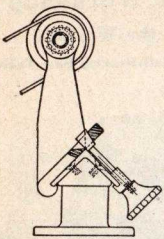
The double ball-bearing lathe live spindle and saw mandril, together with the endless molded rubber V-belt drive, insure delivery of the full ½ Horse Power at the work and freedom from belt troubles.

The three lathe speeds remove all the limitations of single speed design and are essential to securing the proper peripheral speeds for work of different diameters and really fine wood turning.

A careful study of the specifications which follow, or a thorough inspection of the Workshop itself, will convince any one of its easy superiority in the field.

MOTOR—Westinghouse ½ Horse Power Repulsion Type for 110 or 220 volt, 60-cycle alternating current. No load speed, 1725 R.P.M. Mounted on a cast-iron base providing belt adjustment. Equipped with double-end shaft carrying a three-step cone pulley for driving the lathe on one side and single pulley for driving the saw table on the other. Special low starting current of not over 15 amperes meets the requirements of city ordinances regulating this type of equipment.

LATHE BED—Made of 3 x 3 x $\frac{5}{16}$ inch heavy steel angle fixed to two heavy legs that bolt to the bench. Some idea of the tremendous strength of this bed can be appreciated by the fact that it requires a



End view showing how head stock and other fixtures are clamped to bed

force of over 5000 pounds to deflect it $\frac{1}{16}$ of an inch. The cross section cut shows how the fixtures lock over and clamp to the bed. Note particularly the wedging action of the clamp bar.

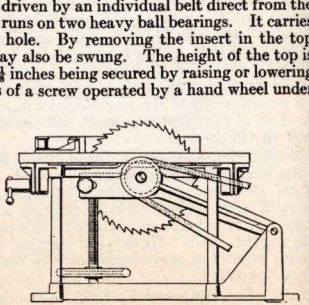
LATHE HEADSTOCK—Heavy iron frame clamped solidly to the bed. Steel spindle, $\frac{7}{8}$ inch in diameter, with $\frac{3}{4}$-inch hole running through it and a No. 1 Morse Taper Socket in both ends. Nose threaded to carry face plate, sanding disc and drum. Runs on two heavy combination thrust and radial ball bearings. Driven by a cone pulley with three steps, 3, 4 and 5 inches in diameter, same as on the motor, giving three spindle speeds of 2875, 1725 and 1035 R.P.M. respectively. The face plate, $6\frac{3}{4}$ inches in diameter, screws on the nose of the spindle. Screw holes for fastening work are provided.

TAIL STOCK—A heavy iron frame which slides and clamps to any desired point on the bed. The steel spindle is provided with a No. 1 Morse Taper Socket to carry the wood center. Spindle has a $3\frac{1}{4}$-inch screw feed operated by a hand wheel $5\frac{1}{2}$ inches in diameter. A positive lever handle screw lock is also provided.

PAGE 214

TEE RESTS—Two adjustable rests and two standards are supplied. The double rest is made entirely of steel and is 12 inches long. The short rest is 6 inches long. Standards slide and lock at any point on the bed.

SAW TABLE—This large, heavy unit bolts directly to the bench to the left of the lathe and is driven by an individual belt direct from the motor. The saw mandril runs on two heavy ball bearings. It carries a 7-inch saw with $\frac{1}{2}$-inch hole. By removing the insert in the top dado heads $\frac{1}{2}$ inch wide may also be swung. The height of the top is fixed, depth of cut up to $2\frac{1}{8}$ inches being secured by raising or lowering the saw mandril by means of a screw operated by a hand wheel under the table. Saw well guarded below table. Table tilts 45 degrees left and can be securely locked there or at any intermediate angle. Top, 13 x 14 inches. Weight, about 50 pounds. Saw speed, 3450 R.P.M.



Side view of saw table showing method of raising and lowering saw mandril

TURNING TOOLS—Four chisels; one $\frac{1}{2}$-inch gouge, one $\frac{1}{2}$-inch square point,

ne ½-inch skew and one ½-inch parting, are regular equipment. These re heavy, high-grade chisels with 6-inch blades and long, comfortable andles.

SANDING DISC—Screws directly on the nose of the lathe live pindle. Face is 6¾ inches in diameter and scored for glueing abrasive aper or cloth.

SANDING DRUM—Felt-cushioned face is 4 inches long and 3 inches n diameter. Screws directly on the nose of the lathe live spindle. fficient lock for holding abrasive paper or cloth.

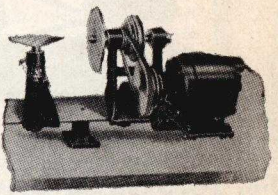
WHEEL ARBOR—Fitted with No. 1 M. T. Shank to fit either end f lathe live spindle. Has flanges for holding wheels with ¾-inch face nd ½-inch holes.

CHUCK—Holds round shank drills from 0 to ½ inch in diameter. Fitted with No. 1 M. T. Shank, fitting both live and tailstock spindles of lathe.

BUFFING WHEEL—A 72-ply loose buff, 7 inches in diameter, with ½-inch hole. Fits arbor.

GRINDING WHEEL—Medium grip wheel, 6 inches in diameter, with ¾-inch face and ½-inch hole. Fits arbor.

WIRE BRUSH WHEEL—A wheel, 4 inches in diameter, with 1-inch face and ½-inch hole with heavy durable wire. Fits arbor.



Rear view of lathe and motor showing detail of V-belt drive

PAGE 215

SAW—Combination cut-off and rip saw, 7 inches in diameter, and ½-inch hole fitting directly on the ball-bearing saw mandril.

BELTS—Two high-grade, endless molded rubber V-belts are supplied. They transmit the full motor power without appreciable loss. They are trouble-proof.

CENTERS—A large spur center for the lathe live spindle and a wood center for the tailstock spindle are supplied.

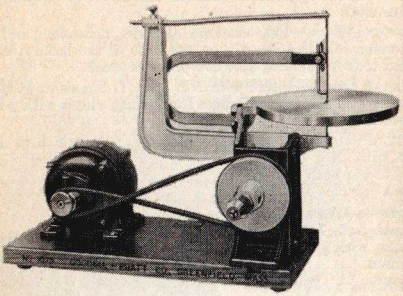
Extreme length, 5 feet 5 inches. Length of lathe bed, 46 inches.

Approximate weight, 150 pounds. Saw table top, 13 x 14 inches.

No. 1931	Workshop complete, 30 inches between centers (ZUJVA)	$98.50
	Workshop complete, 36 inches between centers (ZUJVB)	101.00
	Workshop complete, 42 inches between centers (ZUJVI)	105.00
	Workshop complete, 48 inches between centers (ZUJVO)	109.00

Circular Saw Table complete may be purchased as a separate unit. Price quoted on request.

Motors for Direct Current and for Alternating Current of other than 60 cycles at slight additional cost.



No. 1075 Motor-Driven Scroll Saw

Designed for model makers, pattern and sign makers, jewelers, cabinet makers, wood carvers and for the craftsman who wants to do inlaying, repairing of antique furniture and cutting all sorts of figures and designs in wood and soft metals.

MOTOR—General Electric 110-volt, 60 cycles. Speed, 1800 R.P.M. Other voltages on special order.

TABLE—Diameter, 6¾ inches. Tilts right or left and locks at any angle.

THROAT—8¾ inches. SAWS—6-inch loop or pin end coping saws.

CUT—Saw travel 1½ inches. BELT—¼-inch round supplied.

CHUCK—All-steel, three-jawed, with capacity for ¼-inch drills, mounted on shaft for boring starting holes.

BASE—Both units mounted on a well-finished hard wood base, 6 x 15 inches.

EQUIPMENT—Flexible cord and plug and three coping saws.

Weight, 17½ pounds.

		Price, Each
No. 1075.	Complete, as illustrated.....(ZUHAN)	$36.00
No. 1075.	Without motor.....(ZUHAS)	25.00

Fitted for using Jewelers' Saw Blades, $2.00 extra.

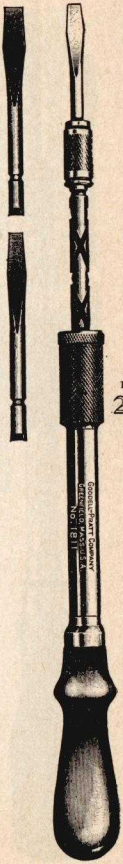
Packed one in a wooden case, 19 x 17 x 8¾ inches.

Weight, 31 pounds.

Heavy Duty Spiral Ratchet Screw-Driver

No. 1811

Patent Applied for



Power, dependability and durability were the outstanding considerations in the design of this new addition to our line of automatic screw-drivers.

The drive nut has been made heavy and long and with proper lubrication is practically indestructible. Both the automatic and ratchet actions operate very smoothly and freely.

By turning the long knurled sleeve right or left the driver automatically drives or draws as desired. The automatic action can be eliminated at will by a slight turn of the lock nut located just above the knurled sleeve.

With the spiral locked the tool can be used as a right or left hand ratchet or rigid screw-driver, simply by shifting the knurled sleeve to the proper position.

The precisely milled, double steel spiral is cut at 20 degrees, giving much greater torque or turning power for the same pressure applied to the handle.

Three forged and tempered blades are furnished. By pulling down the knurled chuck collar they seat quickly and are positively locked when the collar is allowed to spring back into position.

All exposed metal parts are either nickel plated or nicely polished. The handle is hard wood with mahogany lacquer finish.

Length, extended, with blade in place, 27½ inches.

Length, closed, without blade, 14¾ inches.

Net weight, 1¼ pounds.

Price, each.....(ZUOHR) $4.10

Packed one in a carton, 15 x 1¾ x 1¾ inches.

Weight, 1 7/16 pounds.

PAGE 217

Automatic Spiral Ratchet Screw-Driver

No. 811A

A fine, powerful and rugged screw-driver that drives or draws screws automatically, acts as a right or left hand ratchet or as a plain screw-driver.

The automatic action can be locked by a slight turn of the knurled lock nut provided for the purpose. Right and left hand ratchet or rigid action is controlled by turning the long knurled sleeve just above the lock nut.

Three carefully forged and tempered tool steel bits are furnished. These seat positively in the chuck and are held by the quick spring sleeve lock. Blades released by pulling back the sleeve and easily interchanged.

PAGE 218

The steel spiral is precisely cut, affording smooth travel to the hard bronze spiral nuts that drive it. The drive flute is milled twice as deep as the draw flute, so that the lower half is not cut by the intersections of the draw flute, greatly reducing the wear on the drive nut, the most vital part of the tool.

The length of the driving spiral nut has been increased 75 per cent, making this vital part practically indestructible.

The entire tool is beautifully finished. All exposed steel parts are nicely polished or nickel plated, while the comfortably shaped hard wood handle has a fine mahogany finish. The handle is fluted to give a good grip.

Each screw-driver is provided with three tool steel blades hardened, tempered, and polished. Length, extended with blade in place, $19\frac{7}{8}$ inches. Length, closed, $14\frac{3}{8}$ inches. Weight, 1 pound.

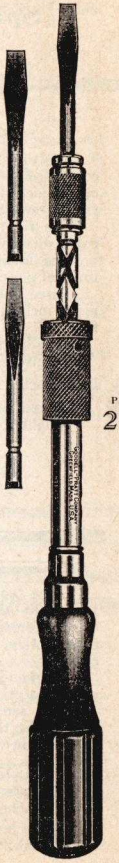
Price, each . . . . . (ZEJAZ) $3.10

Packed one in a carton. Weight, $1\frac{1}{5}$ pounds.

Automatic Spiral Ratchet Screw-Driver

No. 911A

With Quick Return



The quick return action with which this screw-driver is equipped greatly facilitates the ease and speed with which screws may be driven. It is particularly useful in assembly work where large numbers of screws or nuts have to be set and time is an important factor.

A carefully tempered steel spring located in the handle operates this action. It automatically forces the spiral out, ready for the next stroke, as driving pressure is removed from the handle.

In all other respects the tool is the same as No. 811A on the opposite page. It automatically drives or draws, or these actions and the quick return can be eliminated by giving the spiral lock nut a slight turn.

PAGE 219

With the spiral locked the tool can be used as a right or left hand ratchet or a plain screw-driver. These actions are controlled by shifting the knurled collar to right, left or neutral.

All exposed steel parts are nickel plated or nicely polished and the fluted hard wood handle has a mahogany lacquer finish.

Three forged steel bits are furnished.

Length, extended with blade, $19\frac{7}{8}$ inches.

Length closed, $14\frac{3}{8}$ inches. Weight, $1\frac{1}{8}$ pounds.

Price, each..... (zicoc) $3.50

Packed one in a carton, $16\frac{3}{8}$ x $1\frac{1}{2}$ x $1\frac{1}{2}$ inches.

Weight, $1\frac{1}{8}$ pounds.

Spiral Ratchet Screw-Driver

No. 111

A strong, powerful, automatic screw-driver with five quickly controlled actions. It drives or draws automatically; the spiral can be locked and the tool used as a right or left hand ratchet or as a rigid screw-driver.

The right, left and rigid actions are changed by turning the collar directly above the handle right, left or center.

The double steel spiral is cut at an angle that gives the tool unusual power.

Three tool steel blades are furnished. All exposed metal parts nicely nickel plated or polished. Handle is hard wood with mahogany finish.

Length, extended, with bit, 19 inches.

Length, closed, without bit, $10\frac{1}{4}$ inches.

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Price, each..... (YAZRE) $2.70

Packed one in a carton, $10\frac{1}{2}$ x $1\frac{3}{4}$ x $1\frac{3}{4}$ inches.

Weight, 1 pound.

Automatic Screw-Drivers

Patented July 22, 1890; November 17, 1891

These tools can be used as automatic screw-drivers for driving screws or the spirals can be locked, for use as plain screw-drivers for either driving or drawing screws. They are simple in construction, but are strong and durable, and will not get out of order.

The handles are lacquered hard wood, mahogany finish. All exposed steel parts except the spiral are polished.

Each screw-driver is supplied with three interchangeable tool steel blades that are hardened, tempered, and polished.

Made in two sizes for driving small and medium size screws.

No.	Length extended with blade	Length closed without blade	Angle of Spiral	Net Weight		Price, Each
1	14 inches	$7\frac{1}{2}$ inches	40°	8 ounces	(WYBID)	$1.10
2	16 inches	$8\frac{1}{4}$ inches	30°	10 ounces	(WYDEF)	1.30

Each screw-driver packed in a separate carton.

For drill attachments fitting these screw-drivers, see opposite page.

Sockets for Hexagon and Square Nuts

For Use with Automatic Screw-Drivers

These sockets fit the chucks of the automatic screw-drivers on the preceding pages and used with them are exceedingly useful in assembling any product where a large number of small hexagon and square nuts must be set.

They are made of case-hardened steel with twelve notches broached in them so that nuts can be quickly located.

Square nuts fit hex sizes as follows: $\frac{1}{4}$″ square—$\frac{5}{16}$″ hex; $\frac{5}{16}$″ square—$\frac{3}{8}$″ hex; $\frac{3}{8}$″ square—$\frac{1}{2}$″ hex; $\frac{7}{16}$″ square—$\frac{9}{16}$″ hex, and $\frac{1}{2}$″ square—$\frac{5}{8}$″ hex.

Fitting No. 1 Screw-Driver — Per Dozen

No. 967 $\frac{1}{4}$″, $\frac{5}{16}$″ Hexagon Nut Sizes..... (ZIJLY) $3.80

Fitting Nos. 2, 111, 811A and 911A Screw-Drivers

No. 968 $\frac{1}{4}$″, $\frac{5}{16}$″, $\frac{11}{32}$″, $\frac{3}{8}$″, $\frac{7}{16}$″, $\frac{1}{2}$″..... (ZIJOJ) 3.80

Fitting No. 1811 Screw-Driver

No. 969 $\frac{11}{32}$″, $\frac{3}{8}$″, $\frac{7}{16}$″, $\frac{1}{2}$″, $\frac{9}{16}$″, $\frac{5}{8}$″..... (ZIJUK) 3.80

Packed one dozen of a size or one dozen assorted sizes in a carton.

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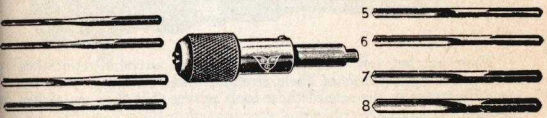
Drill Attachments

For Goodell-Pratt Automatic Screw-Drivers



These sets can be used in connection with our automatic screw-drivers to do small jobs of drilling. They are not as convenient as automatic drills, but are perfectly satisfactory for occasional use.

These sets consist of a chuck for holding fluted drill points, attached to a steel shank fitting the sockets of our automatic screw-drivers.

Eight fluted tool steel drill points, $\frac{1}{16}$ to $\frac{1}{64}$ inch, are furnished with each set.

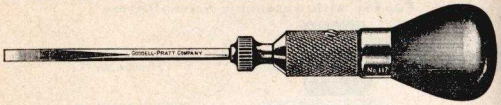
Per Set

No. 1. Fitting No. 1 Screw-Driver..... (WYBBA) $1.00

No. 2. Fitting No. 2, 111, 811A or 911A Screw-Driver. (WYCCA) 1.00

Each set packed in a carton, $4\frac{1}{4}$ x $1\frac{1}{4}$ x $1\frac{1}{4}$ inches.
Weight, $2\frac{1}{2}$ ounces.

No. 117 Radio Ratchet Screw-Driver



A new slim-bladed ratchet screw-driver with knurled socket which can be rapidly rotated between the thumb and forefinger and is a great convenience for running small screws in or out. It is particularly useful for work on electrical and other apparatus where small machine screws are used.

The same dependable ratchet mechanism is used as in our No. 66 below, which has proved its dependability over a great many years. Right or left ratchet or rigid action is controlled by turning the knurled sleeve.

The blades are made of tool steel, hammer forged and carefully hardened and tempered. All exposed metal parts nicely polished or nickel plated. Mahogany finished handle.

Blade	Diameter		Price, Each
3 inch	$\frac{9}{64}$ inch	(WEAPA)	$0.90
4 inch	$\frac{9}{64}$ inch	(WEAPE)	1.00
6 inch	$\frac{9}{64}$ inch	(WEAPO)	1.15

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Packed one half dozen in a carton.

No. 66 Ratchet Screw-Driver

These ratchet screw-drivers have made an enviable reputation for themselves because of their strength and durability, and the steady increase in the sale of these tools proves that they are giving unusual satisfaction.

The mechanism is simple; the ratchet teeth are cut directly into the shank of the blade, a rugged method of construction. The two springs and two dogs which make up the entire ratchet mechanism are oil-tempered tool steel. Changes from right to left or rigid are made by simply turning the knurled ferrule.

Blades are hammer forged from a high grade of tool steel. Handles of the three smallest sizes are knob shaped; other sizes are like illustration above.

Blade Inch	Diam. Inch		Price, Each	Blade Inch	Diam. Inch		Price, Each
$1\frac{1}{2}$	$\frac{1}{4}$	(YAKBA)	$0.70	5	$\frac{9}{32}$	(YAKID)	$1.00
2	$\frac{1}{4}$	(YAKCE)	.70	6	$\frac{9}{32}$	(YAKOF)	1.10
3	$\frac{1}{4}$	(YAKEC)	.80	8	$\frac{5}{16}$	(YAKUG)	1.30
4	$\frac{1}{4}$	(YAKFO)	.90	10	$\frac{5}{16}$	(YAKYH)	1.60

Packed one half dozen in a carton.

Gunsmith's Ratchet Screw-Driver
No. 830

This new tool is equipped with the simple sturdy ratchet mechanism that has proven so popular in our regular line of ratchet screw-drivers. The ratchet teeth are cut directly into the shank of the blade. The rest of the mechanism consists of two tempered steel springs and tool steel dogs which are shifted to right, left, or rigid action by turning the knurled ferrule.

Blade is one inch long, shaped for gunsmith use and similar work. All exposed metal parts nickel plated or nicely polished. The hard wood handle has a fine mahogany finish.

Length overall, 6 inches. Net weight, 3 ounces.

Price, each.....(ZELCA) $1.00

Packed one-half dozen in a carton, $6\frac{1}{4}$ x $3\frac{1}{8}$ x $2\frac{7}{8}$ inches.

Weight, $1\frac{1}{4}$ pounds.

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Right-Angle Ratchet Screw-Driver
No. 668

Patented September 16, 1924.

There are innumerable places around automotive, radio, and electrical equipment where this unique little screw-driver will perform quickly and easily where an ordinary screw-driver cannot be used.

The ratchet mechanism is entirely inclosed in the head, through which runs a square socket to hold the bit. The bit is $\frac{1}{4}$ inch wide, $\frac{1}{2}$ inch long, and has a squared shank with a spring retainer to hold it firmly in the square ratchet socket.

The ratchet mechanism is one way only, the screw-driver blade being shifted from one side to the other as right or left hand ratchet action is wanted.

The tool is 4 inches long over all. The handle and head are finished in red and black enamel, and all exposed steel parts are nicely polished.

Weight, 3 ounces.

Price, each.....(ZAHUX) $1.00

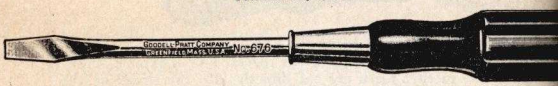
Packed one in a box. Twelve in a display carton.

Screw-Driver

No. 676

Tool Steel Blade Locked to Steel Head

Patented May 6, 1923



A particularly fine quality screw-driver with a heavy steel head set into the end of the handle and everlastingly locked directly to the shank of the blade. The more pounding on the head, the tighter this lock becomes, as the shank spreads on the hardened steel ball and is forced into the body of the head, which is softer steel.

The blades are hammer-forged from a tool steel selected for its remarkable toughness under proper heat treatment. The blade is hardened and tempered its entire length.

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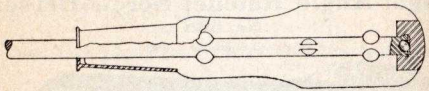

Cross Section of Handle, Steel Head and Blade Shank showing Lock, also the Forged Lugs on the Shank

A series of lugs on the shank prevent any possibility of its turning in the handle into which it is forced. The handle is made of selected hard wood with a fine lacquer mahogany finish. It is protected by a heavy, nickel-plated steel ferrule.

The blade and steel head are highly polished.

Every blade is subjected to a rigid test.

Blade	Diam.		Per Dozen
3 inch	$\frac{7}{32}$ inch	(ZAJUZ)	$4.60
4 inch	$\frac{9}{32}$ inch	(ZAJVE)	5.00
5 inch	$\frac{5}{16}$ inch	(ZAJYO)	6.40
6 inch	$\frac{5}{16}$ inch	(ZAKAV)	7.20
8 inch	$\frac{3}{8}$ inch	(ZAKIX)	9.60
10 inch	$\frac{3}{8}$ inch	(ZAKOZ)	11.20
12 inch	$\frac{3}{8}$ inch	(ZAKUB)	12.20

Packed one half dozen in a carton.

Screw-Driver

No. 909

This general purpose screw-driver represents a fine value. It is a well-finished tool, made of materials that careful research and test have proved best suited to the use and abuse a screw-driver is usually put to.

The highly polished blades are hammer-forged from a special grade of steel selected for its toughness. They are carefully hardened and tempered their entire length. The shank is forged square to prevent any possibility of turning in the handle.

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The handle into which the squared shank is forced is made of hard wood. It is fluted to give a good grip and is protected with a heavy steel ferrule. It has a high mahogany lacquer finish.

Every blade is tested.

Blade	Diam.		Per Dozen
2 inch	$\frac{7}{32}$ inch	(ZIASP)	$3.00
3 inch	$\frac{7}{32}$ inch	(ZIAWS)	3.20
4 inch	$\frac{9}{32}$ inch	(ZIAXT)	3.60
5 inch	$\frac{5}{16}$ inch	(ZIBBO)	4.00
6 inch	$\frac{5}{16}$ inch	(ZIBIZ)	4.30
7 inch	$\frac{5}{16}$ inch	(ZIBOB)	5.00
8 inch	$\frac{3}{8}$ inch	(ZIBUC)	5.60
10 inch	$\frac{3}{8}$ inch	(ZIBWA)	6.40
12 inch	$\frac{3}{8}$ inch	(ZIBYE)	7.40
14 inch	$\frac{3}{8}$ inch	(ZICAY)	9.20
16 inch	$\frac{3}{8}$ inch	(ZICCO)	11.00
18 inch	$\frac{3}{8}$ inch	(ZICEZ)	12.40

Packed one half dozen in a carton.

Machinists' Screw-Driver

No. 367

These powerful screw-drivers are made in four lengths of blade. The blades are forged from a fine grade of square alloy steel and carefully heat treated to give a particularly tough blade for heavy duty work.

The $\frac{3}{8}$-inch square shank permits the use of a wrench when unusual power is needed. The handle is a little larger than ordinary and is made of hard wood with a nice mahogany finish. It is protected by a heavy steel ferrule. Blade is nicely polished and the shank has a natural oil finish.

Every blade given a severe test before packing.

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Blade	Length	Stock		Price per Doz.
2 inch	8 inches	$\frac{3}{8}$-inch square	(YOARY)	$5.00
3 inch	9 inches	$\frac{3}{8}$-inch square	(YOASZ)	5.20
4 inch	10 inches	$\frac{3}{8}$-inch square	(YOAWD)	5.40
6 inch	12 inches	$\frac{3}{8}$-inch square	(YOAWO)	5.80

Packed one half dozen in a carton.

Electricians' Screw-Driver

No. 330

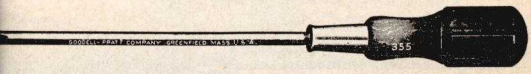
This screw-driver was designed especially for electricians, and is insulated to protect the user from electric shocks. The handle is hard wood, mahogany finish, and is made six sided to insure a firm grip. The blade is set in a hard rubber socket that is solidly set in the handle. The blade is hammer forged from the best tool steel, hardened and tempered.

Every blade tested.

Blade	Net Weight		Price, Each
4 inch	3 ounces	(YINAP)	$0.70
6 inch	4 ounces	(YINIR)	.85
8 inch	5 ounces	(YINOS)	1.00

Packed one half dozen in a carton.

Cabinet Screw-Driver
No. 355



Carefully manufactured from the best materials obtainable for e purpose and finished in keeping.

The blades are hammer forged from a high grade of tool steel, efully oil tempered their entire length and nicely polished.

The handles are hard wood, fluted to give a good grip and have a asing mahogany finish. The handle is protected by a heavy el ferrule.

Every screw-driver is tested before leaving the factory.

de h	Diam. Inch		Per Dozen	Blade Inch	Diam. Inch		Per Dozen
	$\frac{7}{32}$	(YIWAY)	$3.40	$7\frac{1}{2}$	$\frac{7}{32}$	(YIWYA)	$5.20
	$\frac{7}{32}$	(YIWEZ)	3.60	$8\frac{1}{2}$	$\frac{7}{32}$	(YIZAB)	5.80
	$\frac{7}{32}$	(YIWIB)	3.80	$9\frac{1}{2}$	$\frac{7}{32}$	(YIZBA)	6.50
	$\frac{7}{32}$	(YIWOC)	4.30	$10\frac{1}{2}$	$\frac{7}{32}$	(YIZCE)	7.00
	$\frac{7}{32}$	(YIWUD)	4.80	$12\frac{1}{2}$	$\frac{7}{32}$	(YIZEC)	8.20

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Packed one half dozen in a carton.

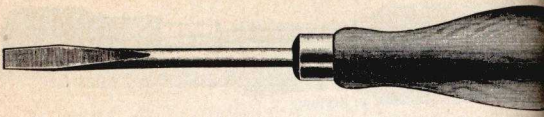
Jewelers' Screw-Driver
No. 331

This is a slim, light screw-driver of the very best quality, suitable r the most delicate work. The handles are hard wood, mahogany ish, protected by nickel-plated ferrules. The blades are hammer rged from the best tool steel carefully hardened and tempered eir entire length. Every blade tested.

de h	Diam. Inch		Per Dozen	Blade Inch	Diam. Inch		Per Dozen
	$\frac{9}{64}$	(YINPA)	$3.30	6	$\frac{9}{64}$	(YIOCH)	$4.80
	$\frac{9}{64}$	(YINSO)	3.60	8	$\frac{9}{64}$	(YIOFK)	5.80
	$\frac{9}{64}$	(YINUT)	4.00	10	$\frac{9}{64}$	(YIOHM)	6.80
	$\frac{9}{64}$	(YINYV)	4.40	12	$\frac{9}{64}$	(YIOJN)	8.20

Packed one half dozen in a carton.

Screw-Driver
No. 332



As good a line of plain screw-drivers as can be made. Every one tested to break a screw head. The handles are hard wood, mahogany finish, protected by nickel-plated ferrules. The blades are hammer forged from the best steel that can be bought for the purpose, and are very carefully hardened and tempered their entire length. The shank of the blade is forged square to prevent any chance of its turning in the handle into which it is forced. Every blade tested.

Blade Inch	Diam. Inch		Per Dozen	Blade Inch	Diam. Inch		Per Dozen
1½	7/32	(YIONS)	$3.30	5	5/16	(YIOXD)	$4.40
2	7/32	(YIOPT)	3.40	6	5/16	(YIPER)	4.80
3	7/32	(YIOSY)	3.60	8	3/8	(YIPTO)	5.80
4	9/32	(YIOVB)	4.00				

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Packed one half dozen in a carton.

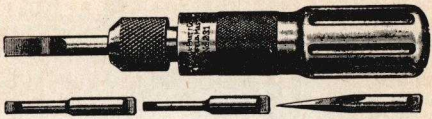
Gunsmiths' Screw-Driver
No. 33
Every Blade Warranted

A very fine tool for the reasonable price at which it is sold. The blade is made of the very best steel obtainable, and is securely fastened into the mahogany finished hard wood handle. Made with a one-inch blade only. Length over all, 4½ inches. Weight, 1 ounce.

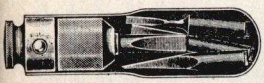
Price, per dozen ..... (YABRA) $4.40

Packed one half dozen in a carton, 6¾ x 4¼ x 1½ inches.
Weight, 9 ounces.

No. 231 Pocket Screw-Driver Set



This is a convenient, practical, and justly popular tool that every one has use for. Particularly useful for repairing firearms, fishing tackle, clocks, radios, sewing machines, etc. The set consists of a hollow handle, with a chuck, three small screw-driver blades, $\frac{1}{8}$, $\frac{3}{16}$, and $\frac{1}{4}$ inch, and a reamer. When not in use the chuck and blades are contained inside the handle, as shown in the illustration.



The blades are made of tool steel and will give satisfactory service. The handle is handsomely polished, nickel plated, and buffed. It is $3\frac{1}{2}$ inches long when closed and weighs 4 ounces.

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Price, each.....(YEVVO) $1.20

Packed one in a carton, $3\frac{1}{2}$ x $1\frac{1}{4}$ x $1\frac{1}{4}$ inches.

Weight, 5 ounces.

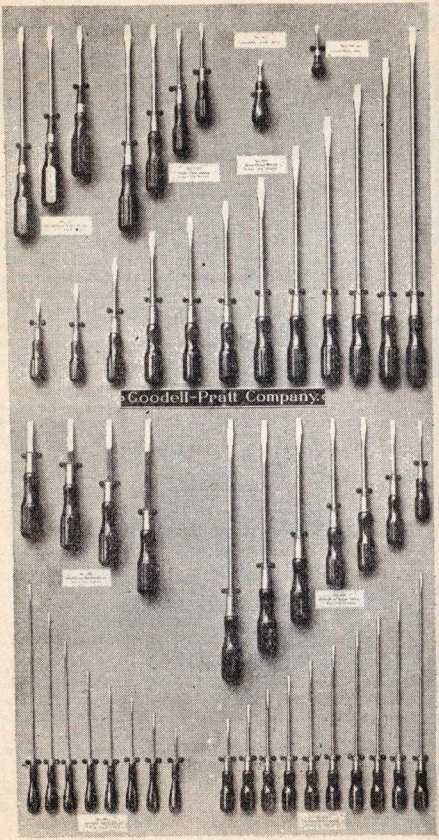
No. 278 Pocket Screw-Driver

This extremely popular little screw-driver has a red and black crackle lacquer finished hard wood handle, a nickel-plated ferrule and a high grade tool steel blade, carefully tempered. The blade is knurled for convenience in rapid rotation and will drive or draw surprisingly large screws.

It is a useful article in any tool box, in an office desk, or in any home.

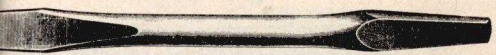
Blade	Diam.		Price per Dozen
$1\frac{5}{8}$ inches	$\frac{5}{32}$ inch	(YIDUK)	$2.00
3 inches	$\frac{5}{32}$ inch	(YIDUM)	2.20

Packed one dozen in a carton.



Steel Head Drivers **Machinists' Drivers** **Electricians' Drivers**
Cabinet Drivers **Pocket Drivers** **Jewelers' Drivers**

Screw-Driver Bits



This line of screw-driver bits cannot be excelled. They are nmer forged from the best quality of steel that can be procured the purpose and carefully tempered to secure the toughness so essary for this class of tool. The blade has a fine bright polished sh. The shank is forged square for use in bit brace chucks.

	Length	Width at Point		Per Dozen
. 351	5 inches	$\frac{1}{4}$ inch	(YIVOB)	$3.00
. 352	5 inches	$\frac{5}{16}$ inch	(YIVUC)	3.30
. 353	5 inches	$\frac{3}{8}$ inch	(YIVWA)	3.60
. 552	5 inches	$\frac{7}{16}$ inch	(YUHTE)	4.20
. 553	5 inches	$\frac{1}{2}$ inch	(YUHUX)	4.50
. 584	5 inches	$\frac{1}{4}$ to $\frac{3}{8}$ inch. Assorted	(YUNIC)	3.30

Packed one dozen in a carton, $5\frac{1}{4}$ x 2 x $1\frac{1}{8}$ inches.
Weight, $1\frac{1}{4}$ pounds.

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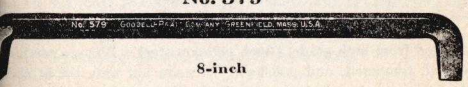
Cabinet Screw-Driver Bits

These screw-driver bits are exactly the same as those described ove, except that they are longer and have a straw color instead of right finish.

	Length	Width at Point		Per Dozen
. 356	6 inches	$\frac{3}{8}$ inch	(YIZFO)	$4.00
. 358	8 inches	$\frac{3}{8}$ inch	(YIZID)	4.40

Offset Screw-Driver
No. 579



8-inch

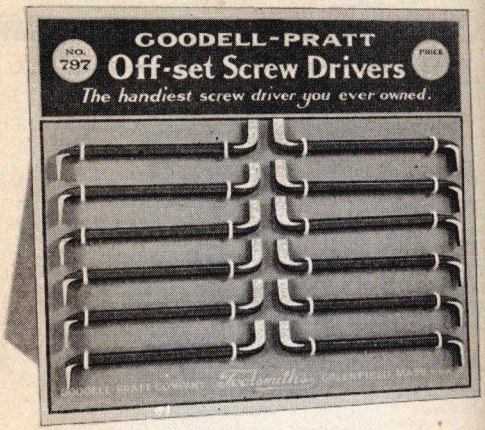
A very useful tool for reaching out-of-the-way screws, starting zen ones or wherever a lot of power is necessary. It is forged m $\frac{3}{8}$-inch octagon steel and carefully tempered. The blades are ound and nicely polished.

Length, 8 inches. Net weight, 5 ounces.

ice, each (YUNAZ) $0.65

Packed one dozen in a carton, $8\frac{3}{4}$ x $2\frac{3}{4}$ x $2\frac{1}{2}$ inches.
Weight, 4 pounds.

No. 797 Offset Screw-Driver



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This is one of those handy little tools that's worth its weight in gold for reaching otherwise inaccessible screws and starting frozen ones within its capacity.

Being somewhat of a specialty they are mounted one dozen on a neat two-color counter display card, 7 x 9 inches, from which they sell very readily.

Forged from high-grade, ¼-inch octagon steel. Bits are carefully hardened, tempered, and polished. Bits are not only set at right angles to one another but are on opposite sides of the handle.

Length, 4¼ inches. Weight, 1½ ounces.

Price, per card of one dozen.....(ZEGIZ) $5.40
Price, per dozen.....(ZEGMO) 5.40

Packed one card in an envelope or one dozen in a carton.

Weight, 1¼ pounds.

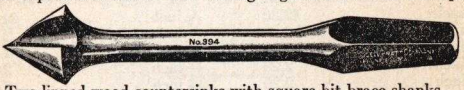
Countersink with Round Shank

Two-lipped for wood, brass, copper, bakelite, fibre, etc. Round shank, $\frac{1}{4}$ inch in diameter, for use in three-jawed chucks. Carefully hardened. Weight, per dozen, 6 ounces.

	Extreme Diameter	Length		Price, per Dozen
No. 652	$\frac{9}{16}$ inch	$1\frac{3}{4}$ inches	(ZAEGS)	$3.20

Forged Countersinks

An unusually fine line of countersinks, hammer forged from the very best quality of tool steel obtainable for this class of tool. Their hammer refined steel is correctly hardened and well polished, and then carefully tempered to a straw color to withstand the grueling work expected of them. The cutting edges are clean and sharp.



Two-lipped wood countersinks with square bit brace shanks.

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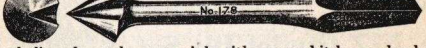
No. 177	$\frac{1}{2}$ inch	$4\frac{1}{4}$ inches	(YEITS)	$5.00
No. 394	$\frac{3}{4}$ inch	$4\frac{1}{4}$ inches	(YOFEM)	5.50

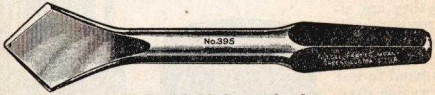
Weights, per dozen, 15 ounces and $1\frac{3}{4}$ pounds, respectively.



Single-lipped metal countersink with square bit brace shank.

No. 178	$\frac{1}{2}$ inch	$4\frac{1}{4}$ inches	(YEIZY)	$5.00

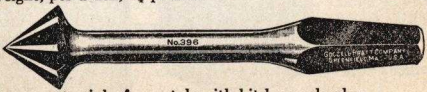
Weight, per dozen, 14 ounces.



Flat metal countersink with bit brace shank.

No. 395	$\frac{3}{4}$ inch	$4\frac{1}{4}$ inches	(YOFLA)	$5.00

Weight, per dozen, $1\frac{1}{4}$ pounds.

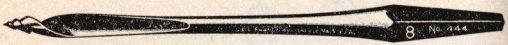


Rose countersinks for metals with bit brace shanks.

No. 396	$\frac{3}{4}$ inch	$4\frac{1}{4}$ inches	(YOFME)	$5.50
No. 691	$1\frac{1}{4}$ inches	$4\frac{1}{4}$ inches	(ZAMUD)	10.80

Weights, per dozen, $1\frac{1}{2}$ pounds and 3 pounds, respectively.

No. 444 Gimlet Bits



Every one of these bits is hand forged from crucible steel and is sharpened by hand, very carefully hardened, and oil tempered.

Every one of these bits will bore faster and will last longer than any other brand on the market.

These are very strong statements, but we back them up by warranting every single one of these bits, and we will gladly replace any bit that is not perfectly satisfactory.

The shanks will fit any bit brace or two-jawed chuck. Length over all, 4 to 6½ inches.

The sizes given below are standard gimlet sizes which are slightly over the actual size of the smaller bits:

	Per Dozen		Per Dozen
1/32 inch	$2.20	8/32 inch	$2.20
2/32 inch	2.20	9/32 inch	2.20
3/32 inch	2.20	10/32 inch	2.20
4/32 inch	2.20	11/32 inch	2.40
5/32 inch	2.20	12/32 inch	2.40
6/32 inch	2.20	Assorted 1/32 to 8/32 inch	2.20
7/32 inch	2.20	Assorted 1/32 to 12/32 inch	2.30

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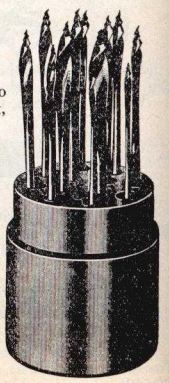
Packed one dozen in a carton, 6¾ x 2¼ x ¾ inch.

Average weight per box, 10 ounces.

No. 577 Gimlet Bit Set

This set consists of twelve gimlet bits, 1/32 to 12/32 inch, put up in a handy round wooden box, where they are always readily available when desired.

Each one of these bits is hand forged from crucible steel, carefully hardened, oil tempered, and sharpened by hand. This will be found a most convenient outfit upon any woodworker's workbench.

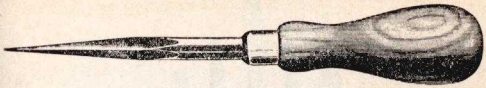


Price, per set, complete ..... (YUMYA) $3.10

Packed one in a carton, 7½ x 3¼ x 3 inches.

Weight, 1½ pounds.

Hand Rimmer
No. 346



This is a very fine little tool for removing the burr around the edge of a hole, increasing the diameter of small holes in wood and soft metals, and for many other jobs. Every gunsmith, assembler, or repairman will find a great deal of use for a tool of this kind.

The blade is hammer forged from good tool steel, and is carefully hardened, tempered, and polished. The handle is made of mahogany finished hard wood, and is protected by a heavy ferrule.

The tool is $6\frac{1}{4}$ inches long over all and weighs nearly 2 ounces.

Price, per dozen.....(YISYO) $4.80

Packed one-half dozen in a carton, $6\frac{3}{4}$ x $3\frac{1}{2}$ x $1\frac{1}{4}$ inches.

Weight, 11 ounces.

Square Reamer
No. 397

PAGE 235

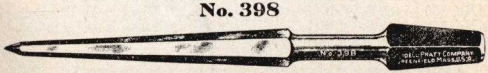
These reamers are made of the very best steel that can be procured for the purpose. They are hammer forged and very carefully hardened, polished, and tempered to a straw color. Maximum diameter of cut, $\frac{5}{8}$ inch. Length over all, $6\frac{1}{2}$ inches.

Price, per dozen.....(YOFOP) $9.00

Packed one dozen in a carton, $6\frac{3}{4}$ x $2\frac{1}{4}$ x $1\frac{3}{4}$ inches.

Weight, $2\frac{1}{2}$ pounds.

Octagon Reamer
No. 398



This reamer is exactly the same as the one described above, except that it has eight cutting edges instead of four. Maximum diameter of cut, $\frac{9}{16}$ inch. Length over all, $6\frac{1}{2}$ inches.

Price, per dozen.....(YOFPO) $11.00

Packed one dozen in a carton, $6\frac{3}{4}$ x $2\frac{1}{4}$ x $1\frac{3}{4}$ inches.

Weight, $2\frac{1}{4}$ pounds.

No. 874 Tool Display

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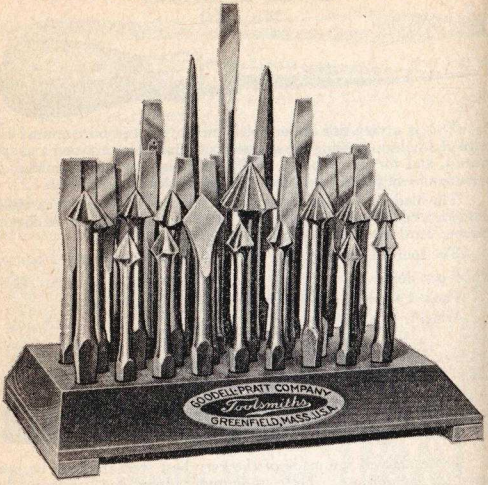


Consists of a substantial display fixture for holding a fast-selling assortment of thirty-six countersinks and screw-driver bits as follows:

3 No. 177 Wood Countersinks
3 No. 178 Metal Countersinks
3 No. 351 ¼-inch S. D. Bits
4 No. 352 5/16-inch S. D. Bits
4 No. 353 ⅜-inch S. D. Bits
2 No. 356 ½-inch S. D. Bits
1 No. 358 ⅝-inch S. D. Bit
2 No. 394 Large Wood Countersinks
1 No. 395 Flat Countersink
6 No. 396 Rose Countersinks
1 No. 397 Square Reamer
1 No. 398 Octagon Reamer
2 No. 552 7/16-inch S. D. Bits
2 No. 553 ½-inch S. D. Bits
1 No. 691 Large Rose Countersink

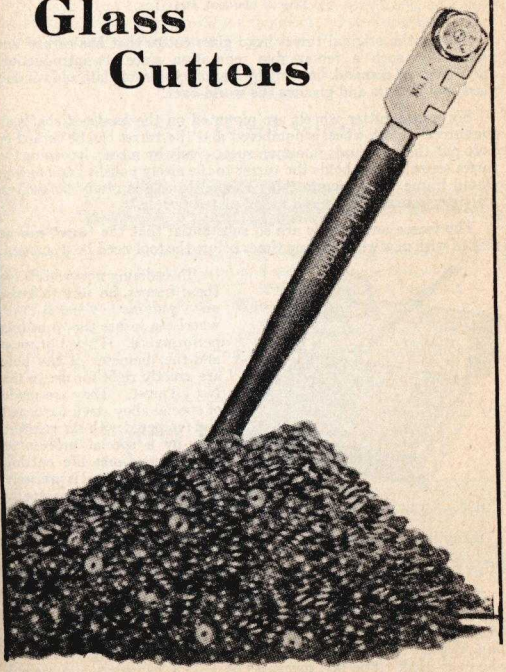
For complete details of individual tools, see pages 231, 233 and 235.

Price, complete..... (ZERYP) $14.60

The tools are packed in a carton, 8¾ x 2⅞ x 2⅜ inches.

Weight, 5 pounds. Fixture packed separately.

Glass Cutters



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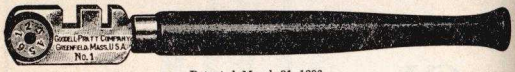
No. 1 Turret Head Glass Cutter

With Honed and Tested Wheels for Cutting Window and Plate Glass



Patented March 31, 1896

This is the original turret head glass cutter that has earned and maintained such a remarkable reputation since its introduction; and is in great demand, not only by manufacturers of plate and window glass, but dealers and glaziers the world over.

Six tested cutter wheels are mounted on the *hardened* shafts of the turret. Each wheel is numbered and the turret can be turned so as to put the six wheels in action successively by merely loosening the turret screw, which holds the turret to the nicely polished and nickel-plated frame. The comfortably shaped handle is nicely finished in mahogany enamel and has a nickel plated ferrule.

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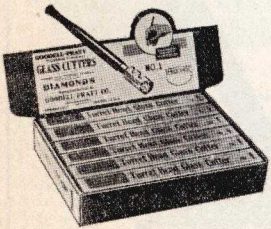
The frame and handle are so substantial that the turret can be refilled with new wheels many times before the tool need be discarded.



In ordering new wheels for these frames, be sure to insist on genuine Goodell-Pratt wheels to insure the same fine performance. Their thickness and the diameter of the hole are exactly right for use in the No. 1 Turret. They are made of special alloy steel, hardened and tempered with the greatest care by a special process to maintain a long life cutting edge. Every wheel is precisely ground, honed and actually tested on glass to insure clean, fast performance.

Length of cutter over all, $5\frac{3}{8}$ inches.

Price, per dozen..... (WYBCE) **$4.10**

Each cutter is packed in a distinctive three color carton. When ordered in dozen lots, 12 cartons are packed in a box. The top of this box folds back making an attractive counter display, as illustrated. This display has greatly increased counter sales of glass cutters wherever used. The box measures $6\frac{1}{4}$ x $3\frac{3}{8}$ x $1\frac{7}{8}$ inches and weighs 14 ounces.

Glass Cutter Wheels

For Turret Head Cutters
Every One Honed and Actually Tested on Glass

These wheels are made for turret head cutters Nos. 1, 400, and 2.

They are made of a special alloy steel hardened and tempered with the greatest care by a specially developed process that gives excellent uniformity.

After being heat-treated *each wheel is ground, honed and actually tested on glass* before it is passed for shipment. For clean, easy cuts and long life these wheels cannot be surpassed.

Price, per dozen.....(ZOTVA) $0.60

No. 400 Turret Head Glass Cutter

With Honed and Tested Wheels

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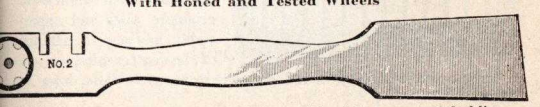
Similar to the No. 1 described on the preceding page but furnished with twelve wheels, six in the turret and six in the magazine compartment shown in the illustration. A steel ball for glass breaking is attached to the end of the handle. Wheels carefully honed and tested.

No. 400. Price, per dozen.....(YOGEN) $7.80

Each cutter in a separate carton; 12 cartons in a pasteboard box, $6\frac{1}{4}$ x $3\frac{3}{8}$ x $1\frac{7}{8}$ inches. Weight, per dozen, 1 pound.

No. 2 Turret Head Glass Cutter

With Honed and Tested Wheels



This glass cutter and putty knife combined has a turret holding six cutter wheels. The head and knife are nicely polished and the handle is finished in red enamel. Honed and tested wheels.

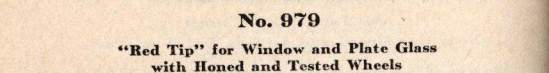
No. 2. Price, per dozen.....(WYCED) $5.00

Packed one dozen in a carton, 6 x $2\frac{1}{2}$ x 1 inch. Weight, per dozen, $1\frac{3}{8}$ pounds.

Glass Cutter

No. 979

"Red Tip" for Window and Plate Glass with Honed and Tested Wheels



The design and performance of this single wheel glass cutter is backed by our forty-two years' experience in the manufacture of these tools.

The wheel, the vital part, is made of a special alloy steel carefully machined, painstakingly heat-treated and then ground and double honed to a keen edge at the critical angle that produces a clean cut with the least effort.

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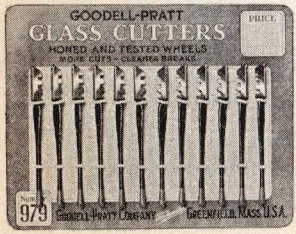
Each wheel is *actually tested on glass* before being assembled in its frame, which is smooth and comfortably shaped and attractively finished in black with a distinctive red tip.



Two attractive counter displays have been designed for merchandising this fine cutter. One holds one half dozen cutters while the larger one holds a full dozen.

Both displays have demonstrated their ability to originate sales and appreciably increase the volume of glass cutter sales.

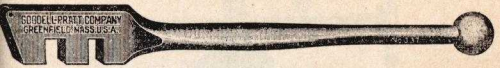
They are also put up in individual cartons, packed one dozen in a box.

Length of cutter, $5\frac{1}{4}$ inches.

Price, Display with 6 cutters, complete	(ZIKUT)	$1.20
Price, Display with 12 cutters, complete	(ZIKYR)	2.30
Price, per dozen in cartons	(ZILAH)	2.20
Price, per gross in cartons		24.00

No. 337 Glass Cutter

For Cutting Window and Plate Glass

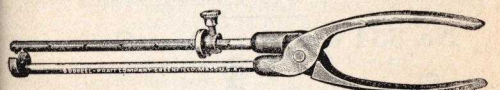


This has always been one of the popular patterns of single wheel cutters. The handle is comfortably shaped with a ball on the end for tapping when this is necessary or desirable. Nicely finished in red and black lacquer. Every wheel ground, honed and actually tested on glass before being installed in the frame. Length, 5 inches.

Price, per dozen.....(YIRUX) $2.00

Packed one dozen in a carton, 5½ x 3 x 1⅛ inches. Weight, 1 pound.

No. 218 Glass Tube Cutter



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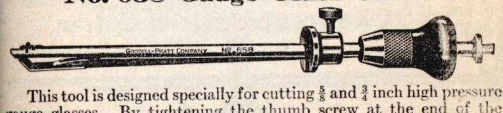
This cutter is provided with a graduated steel beam, 6½ inches long, with a gauge stop that can be set at any desired point. The cutter wheel is honed and tested; and as it can be easily replaced as it becomes dull, the tool will always be in a serviceable condition. The beams of this tool are nickel plated and the handles finished in red and black enamel. Length, 12½ inches. Net weight, 10 ounces.

Price, each.....(YEERO) $1.60

Packed one in a carton, 13¼ x 2¼ x 7⅝ inches. Weight, 12 ounces.

No. 658 Gauge Glass Cutter



This tool is designed specially for cutting ⅝ and ¾ inch high pressure gauge glasses. By tightening the thumb screw at the end of the handle the end of the tool is expanded until a bearing is obtained on both sides of the internal wall. Such a positive pressure exerted directly back of the cutter wheel insures a deep cut and a clean break. The heavy knurled ferrule and handle provide a good grip for turning. The rod which carries the tested wheel is $\frac{5}{16}$ inch in diameter and carries a sliding collar with a lock screw for cutting various lengths. The cutter wheel is easily replaceable when dull.

Length, 10 inches. Net weight, 5 ounces.

Price, each.....(ZAFRE) $3.00

Packed one in a carton. Weight, 7 ounces.

No. 478 Circular Glass Cutter

This glass cutter has a graduated beam that can be quickly and firmly set to cut circles of any size from 2 to 12 inches in diameter.

Each one is provided with one of our high grade cutter wheels. Each wheel is honed twice, and tested by actually cutting glass before being mounted in the tool. New wheels easily installed.

The standard has a rubber base to prevent slipping. Net weight, 5 ounces.

Price, each..... (YOSAZ) $1.50

Packed one in a carton, $7\frac{1}{2}$ x $2\frac{3}{4}$ x $2\frac{1}{4}$ inches. Weight, 8 ounces.

No. 354 Circular Glass Cutter

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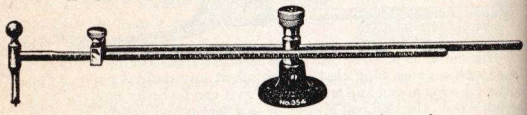
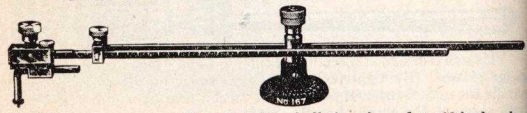


This glass cutter has a double beam so that it can be set to cut circles of any size from 2 to 48 inches in diameter. The beams are graduated, and one of them is fitted with one honed and tested wheel. The standard has a rubber base. Net weight, 9 ounces.

Price, each..... (YIVYE) $2.00

Packed one in a carton, $13\frac{1}{2}$ x $2\frac{3}{4}$ x $2\frac{1}{4}$ inches. Weight, 14 ounces.

No. 167 Circular Glass Cutter



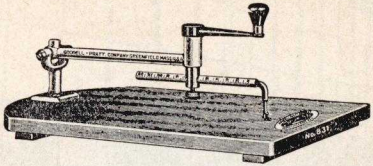
This glass cutter will cut circles of all sizes from $\frac{1}{2}$ to 48 inches in diameter. Circles smaller than 2 inches are cut by means of the mechanism shown at the extreme left of the illustration. The beams are graduated. The standard has a rubber base. One honed and tested wheel is provided with each tool. Net weight, 10 ounces.

Price, each..... (YEGUH) $3.00

Packed one in a carton, 14 x $2\frac{3}{4}$ x $2\frac{1}{4}$ inches. Weight, 15 ounces.

All of these circular glass cutters can be furnished with metric graduation if desired.

No. 831 Circular Glass Cutter



An efficient machine for cutting circular pieces of glass from 1 to 12 hes in diameter very rapidly. The graduated cutter beam carrying e double honed and tested wheel is operated by the handle, both ing mounted in a pivoted arm which can be raised and tipped back en glass is being changed. The pivoted arm works in a standard ich is securely screwed to the 12 x 15 inch cleated board base. heels easily changed.

Twelve extra double honed and tested wheels furnished.

Weight, 2 pounds 10 ounces.

ice, each. . . . . (ZELDE) $10.00

Packed one in a carton, $15\frac{3}{4}$ x $12\frac{1}{4}$ x $3\frac{1}{4}$ inches.

Weight, 4 pounds.

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No. 979 Glass Cutter

"Green Tip" for Art and Cathedral Glass with Honed and Tested Wheels

Opalescent, art, cathedral glass and many other special grades e very hard and require a wheel that is ground and honed at a ore acute angle to cut them satisfactorily.

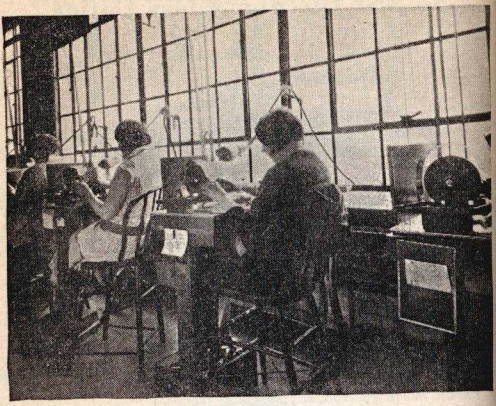
The wheels in this cutter are made from special alloy steel, hard- ed and tempered with the greatest care and ground and honed at e angle that exhaustive research has proved most efficient for the rpose. Each wheel is actually tested on glass before being installed the frame.

Not recommended for cutting ordinary glass.

Length over all, $5\frac{1}{4}$ inches.

ice, per dozen. . . . . (ZILAM) $2.20

Packed one cutter in a box, twelve boxes in a carton.



Infinite care is taken in the grinding and honing of G-P Glass Cutter Wheels

Every wheel is actually tested on glass before it goes into a G-P Cutter

Automatic Drills

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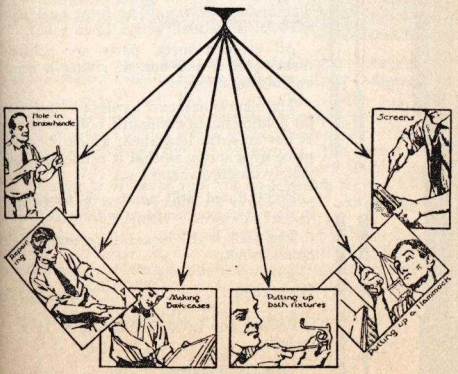

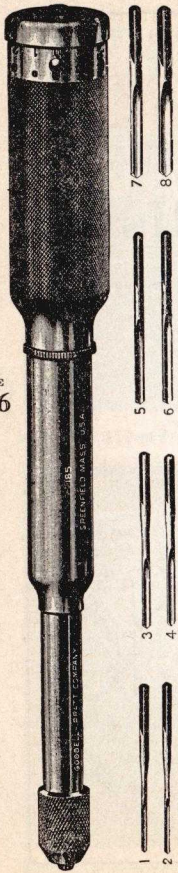

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Automatic Drill

No. 185

Patented December 28, 1915

Registered U. S. Patent Office as

Mr. Punch

This automatic drill embodies all the special features that forty years of experience in the manufacture of these tools has shown to be necessary or desirable.

Eight drill points are contained within the magazine handle, each in a separate numbered compartment, from which they are released, one at a time, through a hole in the rotating cap. A drill point gauge shows the exact size of the drill point in each compartment, a patented feature that is not found in any other similar tool.

The center nut, which is the most important part of any spiral-driven tool, is made of a very hard grade of brass and will give lasting service. The front portion of the tool is made of hollow brass tubes.

All exposed metal parts are polished, nickel plated and buffed, giving a bright and lasting finish.

The chuck has two hardened steel jaws for holding fluted shank drill points securely. It has an extra long shell, which is held in place by a spring so that it cannot be completely unscrewed and lost.

Eight fluted drill points, $\frac{1}{16}$ to $\frac{11}{64}$ inch in diameter, are furnished with each tool.

The tool is 10 inches long and weighs 8 ounces net.

Price, each..... (YEKIJ) $2.50

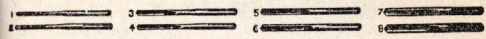
Packed one in a carton, $10\frac{1}{4}$ x $1\frac{1}{2}$ x $1\frac{1}{4}$ inches.

Weight, 9 ounces.

No. 809 Automatic Drill

"Mr. Punch Junior"

Patented December 28, 1915



This drill is only 7½ inches long, making it very easy to use in cramped places. It is also short enough to fit the pocket.

It bores holes just as rapidly as the longer models. Eight drill points, $\frac{1}{16}$ to $\frac{1}{4}$ inch in diameter, are held in separate numbered compartments in the patented magazine handle from which they are released one at a time through a hole in the rotating cap. A drill point gauge shows the size hole bored by the drill in each compartment. All exposed metal parts nicely polished, nickel plated, and highly buffed.

Eight fluted drill points, $\frac{1}{16}$ to $\frac{1}{4}$ inch in diameter, furnished.

Overall length, 7½ inches. Net weight, 8 ounces.

Price, each..... (ZEILF) $2.40

Packed one in a carton, $8\frac{1}{4}$ x $1\frac{3}{8}$ x $1\frac{1}{4}$ inches.

Weight, 10 ounces.

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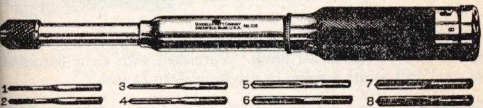
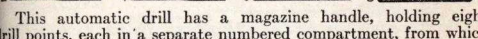
No. 108 Automatic Drill





This automatic drill has a magazine handle, holding eight drill points, each in a separate numbered compartment, from which they are removed through a hole in the rotating cap. The handle is knurled its entire length, giving a firm grip. The center nut, which is the most important part of any spiral-driven tool, is made of a very hard grade of brass and will give lasting service. The front portion of the tool is made of brass tubes. All exposed metal parts are polished, nickel plated, and buffed.

The chuck has two hardened steel jaws for holding fluted shank drill points securely. It has an extra long shell, which is held in place by a spring so that it cannot be completely unscrewed and lost.

Eight fluted drill points, $\frac{1}{16}$ to $\frac{1}{4}$ inch in diameter, are furnished with each tool.

The tool is 10 inches long, and weighs 8 ounces net.

Price, each..... (YATPA) $2.30

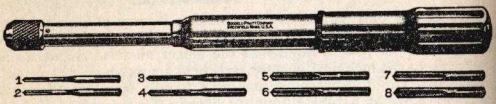
Packed one in a carton, $10\frac{1}{4}$ x $1\frac{1}{2}$ x $1\frac{1}{4}$ inches.

Weight, 9 ounces.

Automatic Drills

With Dull Nickel Finish

These tools are exactly the same in mechanical construction as our more expensive styles, but are not polished. The dull nickel finish affords a considerable saving in the cost without detracting in any way from the efficiency of the tool.



No. 01. Corrugated brass handle; dull nickel finish. Furnished with eight hardened tool steel drill points ranging in size from $\frac{1}{16}$ to $\frac{11}{64}$ inch.

Price, each..... (WUZUV) $1.50

Packed one in a box, 10 x $1\frac{1}{4}$ x $1\frac{1}{4}$ inches. Weight, 7 ounces.

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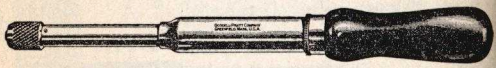
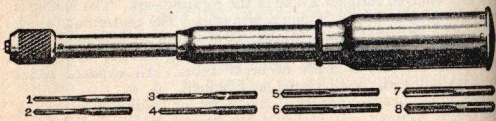


No. 02. Hard wood handle with mahogany lacquer finish. Balance of tool dull nickel finish. Furnished with eight hardened tool steel drill points ranging in size from $\frac{1}{16}$ to $\frac{11}{64}$ inch.

Price, each..... (WYBOF) $1.60

Packed one in a box, 10 x $1\frac{1}{2}$ x $1\frac{1}{2}$ inches. Weight, 8 ounces.

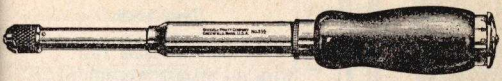


No. 03. Patented magazine handle holding eight drill points $\frac{1}{16}$ to $\frac{11}{64}$ inch, each in an individual numbered compartment. Dull nickel finish.

Price, each..... (WYDFE) $1.80

Packed one in a box, 10 x $1\frac{1}{4}$ x $1\frac{1}{4}$ inches. Weight, 9 ounces.

No. 3½ Automatic Drill



This drill is equipped with a hard wood handle with a pleasing mahogany lacquer finish. It is of the magazine type with a nickel plated flange and cap permitting access to the eight drill point compartments within. Each compartment is numbered. The center nut, the most vital part of an automatic drill, is made of a very hard grade of brass and will give lasting service. All exposed metal parts are polished, nickel plated and buffed, giving a bright, lasting finish.

The chuck has two hardened jaws for holding fluted shank drills very securely.

Eight fluted drill points, $\frac{1}{16}$ to $\frac{11}{64}$ inch diameter, furnished with each tool.

Length, 10 inches. Weight, 7 ounces net.

Price, each.....(WYERS) $2.20

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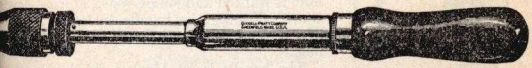
Packed one in a carton, $10\frac{1}{2}$ x $1\frac{3}{4}$ x $1\frac{1}{2}$ inches.
Weight, 9 ounces.

No. 35 Automatic Drill

Capacity 0 to ¼ inch



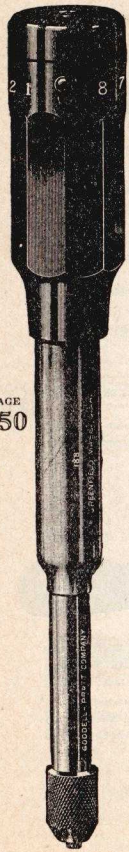
This drill is equipped with a three-jawed chuck which will handle twist drills up to $\frac{1}{4}$ inch in diameter. The handle is made of hard wood nicely finished in mahogany lacquer. All exposed metal parts are polished, nickel plated, and buffed.

The all-steel chuck has three hardened jaws which will hold round shank drills of all sizes up to and including $\frac{1}{4}$ inch in diameter. No drills furnished with this tool.

Length, $11\frac{1}{4}$ inches. Weight, 9 ounces.

Price, each.....(YACSA) $3.00

Packed one in a carton, $11\frac{1}{2}$ x $1\frac{3}{4}$ x $1\frac{3}{4}$ inches.
Weight, 12 ounces.



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Automatic Drill

No. 188

The Household Tool
With the Molded Bakelite Handle

This new tool is built for the home, to provide a highly efficient drill at a very reasonable price that any man, woman, or child can use to bore the many holes needed from time to time, for installing the many modern fixtures that go into every room in the house, and innumerable other uses.

It drills eight different size holes quickly, and with surprising ease; in hard and soft wood, soft metals, wall board, plaster, etc. The eight drill points are contained in the numbered compartments in the magazine handle made of shiny, jet black, molded bakelite. They are safely locked in until wanted.

To remove the size drill wanted, release the cap lock by slipping down the lock button, turn the hole in the cap opposite the proper drill compartment and tip out the drill.

Insert the drill selected in the four-jawed chuck, tighten the chuck nut and the tool is ready to use. Place the drill point where the hole is wanted and simply push down a few times, allowing the handle to spring back after each stroke, and there is a good clean hole.

The handle is jet black molded bakelite with a polished finish. The exposed metal parts are beautifully polished and nickel plated. The spiral driving mechanism is very well made and is practically indestructible with proper lubrication.

Eight fluted shank drill points, $\frac{1}{16}$ inch to $\frac{1}{4}$ inch in diameter, are furnished with each drill.

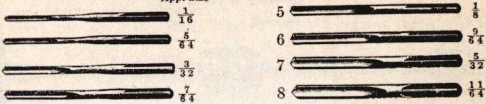
Length, $9\frac{5}{8}$ inches. Weight, 6 ounces.

Price, each..... (YEKNA) $1.40

Packed one in a carton, $9\frac{3}{4} \times 1\frac{3}{8} \times 1\frac{3}{8}$ inches. Weight, 8 ounces.

Fluted Shank Drill Points

No.	App. Size	No.	App. Size
1	1/16	5	1/8
2	5/64	6	9/64
3	3/32	7	5/32
4	7/64	8	11/64



These drill points have fluted shanks for use in the two-jawed chucks of automatic drills. They are manufactured from the finest grade of tool steel, are very carefully hardened and oil tempered.

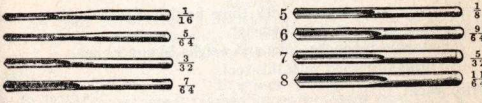
The straight flutes are very desirable for drilling wood or soft metals.

Length over all, about 2 inches.

Price, per dozen..... (ZOTOZ) $0.75
Price, per set of 8 (1 of each size)..... (ZOTPA) .50

Plain Shank Drill Points

No.	App. Size	No.	App. Size
1	1/16	5	1/8
2	5/64	6	9/64
3	3/32	7	5/32
4	7/64	8	11/64



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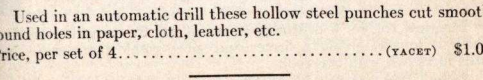
Exactly the same as those shown above, except that they have plain round shanks that can be held in any three-jawed chuck.

Price, per dozen..... (ZOTUB) $0.50

These drill points can be furnished in sets of eight when desired.

No. 34 Punch Points

No.	App. Size	No.	App. Size
1	9/64	3	3/16
2	11/64	4	13/64



Used in an automatic drill these hollow steel punches cut smooth round holes in paper, cloth, leather, etc.

Price, per set of 4..... (YACET) $1.00

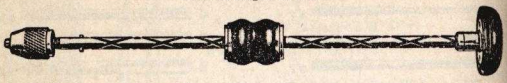
Drill Point Stock Cabinet

A very neat little stock cabinet for holding fluted or round shank drill points can be furnished at a nominal cost to dealers stocking these points in good quantities. List price, each..... $1.00

No. 0 Reciprocating Drill

Capacity 0 to ¼ inch

Patented August 13, 1895



This tool is designed for rapid drilling in iron, brass, or wood, as well as for use in places where a bit brace or breast drill cannot be used.

The traveling handle contains the flanges and hard bronze nuts which constitute the simple and durable driving mechanism, which causes the chuck to revolve continuously to the right when the traveling handle is moved either forward or backward.

Both the head and traveling handle are made of selected hard wood with a fine mahogany lacquer finish.

The head has a heavy steel quill running on ball bearings. The polished steel spiral, 12½ inches long, is accurately cut to a 17½° angle, giving ample power.

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The chuck is all steel, with three hardened jaws holding round shank drills 0 to ¼ inch in diameter.

The tool is 16½ inches long and weighs 15 ounces net.

No drills furnished with this tool.

Price, each..... (WUZTO) $3.00

Packed one in a carton, 16¾ x 2½ x 2½ inches.
Weight, 1¼ pounds.

No. 101 Reciprocating Drill

Capacity 0 to ¼ inch

Patented August 13, 1895

Identical to No. 0 drill above, except for the traveling handle, which is longer, giving a firmer and more comfortable grip. No drills furnished with this tool.

Length, 16½ inches. Weight, 1 pound net.

Price, each..... (YAWUS) $3.00

Packed one in a carton, 16¾ x 2½ x 2½ inches.
Weight, 1¼ pounds.

Hand and Breast Drills

Our line of hand and breast drills has a world wide reputation for style, quality, and completeness.

We were the first manufacturers to cut the gears of these tools by machinery from solid blanks and to equip them with three-jawed chucks for using round shank drills. The many other fine features found in them are the result of exhaustive research and experimentation by our competent engineering and manufacturing staffs. No effort is spared to keep these lines in the lead—outstanding in quality, performance and value and in meeting the requirements of modern mechanics in every branch of industry.

Styles and Capacities

Many different styles, sizes and types are offered. These in turn are made with various capacities up to and including $\frac{3}{8}$ inch in hand drills and up to and including $\frac{3}{4}$-inch round shanks in breast drills and also for square or bit brace shanks.

Frames

Malleable iron, steel, aluminum, iron with steel shanks and aluminum frames with steel shanks are used, in each instance the materials selected being best suited to the type of drill in which it is used.

Gears

All gears are accurately machine-cut from solid blanks. They mesh closely and run smoothly, quietly, and easily. All large or drive gears, except in the enclosed gear types, are made of smooth gray iron castings.

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Bearings

Spindles run in closely reamed fits on hardened steel steps or ball bearings to insure durability and easy operation.

Speeds

Both single, two speed and high speed drills are included. The speed change mechanisms in the two-speed types are quickly and easily operated, positive in action and foolproof.

Chucks

All chucks for holding round shank drills are made entirely of steel with three hardened jaws. They are readily tightened or loosened by hand, grip drills very securely and center them closely. Chucks for holding bit brace shanks have two forged jaws.

Finish

The finish on all iron frame drills is a fine, glossy, baked-on black enamel with the large gears finished in the well known "Toolsmith's Red." This attractive color combination constitutes a trade-mark which has been registered in the U. S. Patent Office. With a few exceptions all exposed steel parts are nicely polished, nickel plated, or both. The frames of high speed drills are highly polished aluminum.

Performance

Goodell-Pratt Hand and Breast Drills have been thoroughly modernized and are warranted to return a wealth of satisfactory performance for the price at which they are sold.

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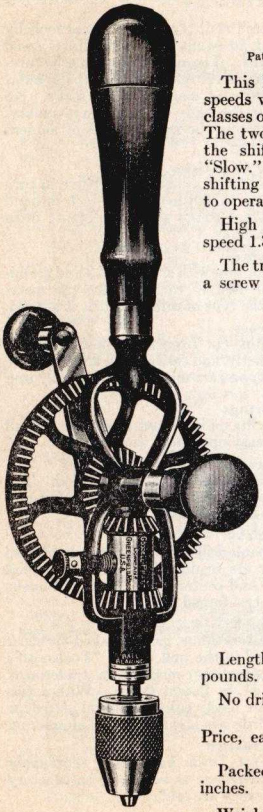


Hand Drill

No. 5½

Capacity 0 to ⅜ inch

Patented August 13, 1895; March 31, 1896

This hand drill is provided with two speeds which enable it to be used on all classes of work up to its extreme capacity. The two speeds are changed by turning the shifter knob marked "Fast" and "Slow." The improved clutch makes shifting mechanism stronger and easier to operate.

High speed gear ratio 3.83 to 1, low speed 1.33 to 1.

The tropical hard wood end handle has a screw cap that can be removed when handle is used for holding drills. Large, comfortable knob side and crank handles are provided.

The frame is malleable iron, black enameled.

All gear teeth are accurately cut by automatic machinery. Pinions are steel. Large gear is finished with red enamel.

The accurately turned steel spindle runs in ball bearings. It has a hardened end that runs in a hardened steel cone bearing set in the frame.

The all-steel chuck has three hardened jaws for holding round shank drills 0 to $\frac{3}{8}$ inch in diameter. Bright nickel finish.

Length, 14½ inches. Net weight, 2½ pounds.

No drills furnished with this tool.

Price, each.....(WYFUK) $5.50

Packed one in a carton, 15 x 4¼ x 3¼ inches.

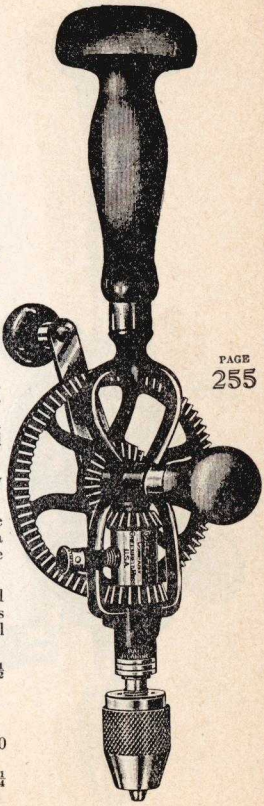
Weight, 3 pounds.

Hand and Breast Drill

No. 5½ B

Capacity 0 to ⅜ inch

Patented August 13, 1895; March 31, 1896



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This tool is the same as No. 5½, shown on the preceding page, except that it has a different end handle.

The hard wood handle with lacquered mahogany finish has a large head upon which pressure can be exerted comfortably when using large drills. Large, comfortable knob side and crank handles are provided.

The frame is malleable iron, black enameled.

All gear teeth are machine cut. Pinions are steel. Large gear is finished in red enamel.

This drill has two speeds, changed by turning the shifter knob marked "Fast" and "Slow." The improved clutch makes shifting mechanism stronger and easier to operate.

High speed gear ratio 3.83 to 1, low speed 1.33 to 1.

The accurately turned steel spindle runs on ball bearings. The end runs in a hardened steel cone bearing set in the frame.

The all-steel chuck has three hardened jaws for holding round shank drills 0 to ⅜ inch in diameter. Bright nickel finish.

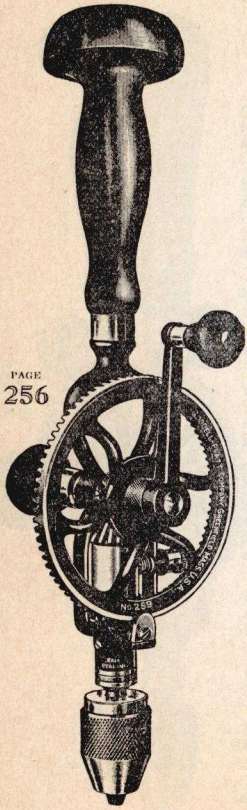
Length, 14¾ inches. Net weight, 2½ pounds.

No drills furnished with this tool.

Price, each... ... ...(WYGAG) $5.50

Packed one in a carton, 15 x 4¼ x 3¼ inches.

Weight, 3 pounds.



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Ratchet Hand and Breast Drill

No. 259

Capacity 0 to ⅜ inch

Patented Aug. 13, 1895; March 31, 1896; Sept. 16, 1924

This tool is identical with No. 5½ B described on the preceding page with the addition of a new powerful, trouble-proof ratchet mechanism.

The ratchet teeth are broached in the hub of the drop-forged steel crank. The hardened steel dogs that engage these teeth are located in recesses cut directly in the shaft and are both operated by one cleverly protected spring. The position of the ratchet dogs is such that the forces to which they are subjected are almost wholly compressive, making breakage impossible.

The actions, Fast Right Hand ratchet, Fast Left Hand ratchet, Slow Right Hand ratchet, Slow Left Hand ratchet, Fast Positive and Slow positive, are all controlled by a slight turn of the knurled dial on the end of the shaft, in combination with the change speed mechanism on the side of the frame.

High speed gear ratio 3.83 to 1, low speed 1.33 to 1.

The all-steel chuck has three hardened jaws for holding round shank drills 0 to ⅜ inch in diameter. Bright nickel finish.

Length, 14¾ inches. Net weight, 2½ pounds.

No drills furnished with this tool.

Price, each..... (YIBIF) $6.10

Packed one in a carton, 15 x 4¼ x 3¼ inches.

Weight, 3 pounds.

Hand Drill
No. 1515

Capacity 0 to ⅜ inch

Patented August 13, 1895

This hand drill is modern in design nd construction and has many features hat have made it very popular with all lasses of mechanics.

The tropical hard wood handle has a crew cap containing eight tool steel rills. Large, comfortable knob side nd crank handles are provided.

The frame of this tool is aluminum, vhich gives as great strength as iron, but s much lighter in weight. The frame is o shaped that it can be readily gripped, nstead of the side handle, if desired. t is finished in ebony enamel.

All gear teeth are machine cut. Pinon is steel. Large gear is solid and finshed in red enamel. Gears are held ogether by a hardened steel guard that prevents slipping without causing undue riction.

The accurately turned steel spindle uns in ball bearings, which take up all nd thrust.

The gear ratio is 4 to 1.

The all-steel chuck has three hardened aws for holding round shank drills of all izes from 0 to ⅜ inch in diameter. Bright ickel finish.

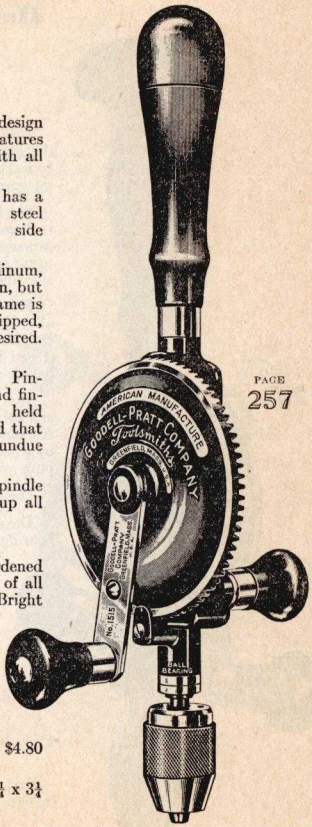
Length, 14¼ inches. Net veight, 2¼ pounds.

Eight drill points, 1/16 to 1/4 nch, furnished with each tool.

Price, each.....(ZOAST) $4.80

Packed one in a carton, 15 x 4¼ x 3¼ nches.

Weight, 2¾ pounds.



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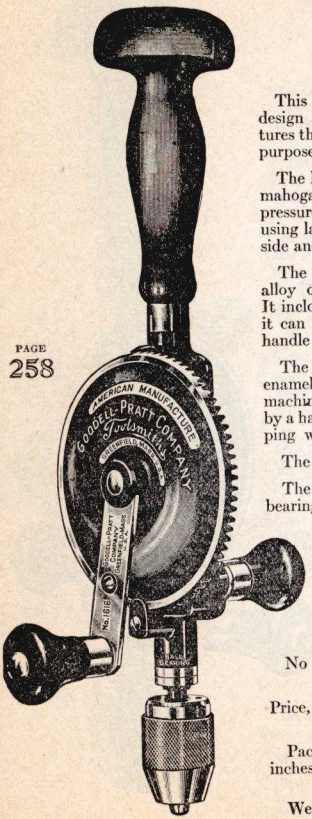
Hand and Breast Drill

No. 1616

Capacity 0 to 3/8 inch

Patented August 13, 1895



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This hand and breast drill is of unique design and construction, embodying features that make it an unusually good general purpose drill.

The hard wood end handle with lacquered mahogany finish has a large head upon which pressure can be exerted comfortably when using large drills. Large, comfortable knob side and crank handles are provided.

The frame of this drill is aluminum alloy of great strength but light weight. It incloses the pinion and is so shaped that it can be used as a grip instead of the side handle if desired.

The large gear is solid, finished in red enamel. Pinion is steel. All gear teeth are machine cut. The gears are held together by a hardened steel guard that prevents slipping without causing undue friction.

The gear ratio is 4 to 1.

The accurately turned spindle runs in ball bearings which take up all end thrust.

The all-steel chuck has three hardened jaws for holding round shank drills of all sizes from 0 to 3/8 inch in diameter. Bright nickel finish.

Length, 14½ inches. Net weight, 2¼ pounds.

No drills furnished with this tool.

Price, each.... .....(ZOBUH) $4.50

Packed one in a carton, 15 x 4¼ x 3 inches.

Weight, 2¾ pounds.

Hand Drill

No. 379

Capacity 0 to ¼ inch

Patented August 13, 1895

The tropical wood end handle with which is drill is equipped is hollow with a screw cap at makes a very serviceable compartment for olding small drills.

The crank and side handles are hard wood inished in mahogany lacquer.

Frame is glossy black enameled malleable on.

The large gear and steel nion are nickel plated. The rge gear is finished in red amel with the rim nicely olished. All teeth machine t.

Gear ratio 4.12 to 1.

Chuck is all steel with three hard-ed jaws for holding round shank ills 0 to ¼ inch in diameter. Nicely ckel plated.

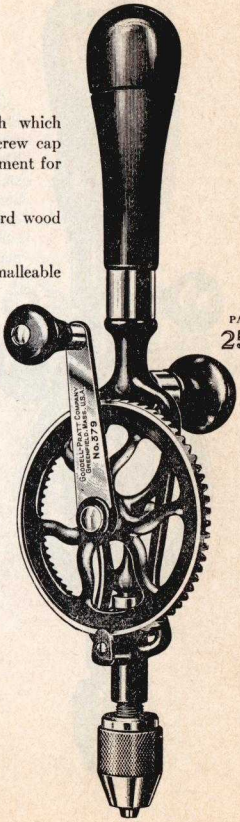
Length, 12⅝ inches. Net weight, pounds.

Eight drill points $\frac{1}{16}$ to $\frac{1}{64}$ inch, pplied with each tool.

rice, each.....(YOCJA) $3.65

Packed one in a carton, 12¾ x 3 2¾ inches.

Weight, 1⅞ pounds



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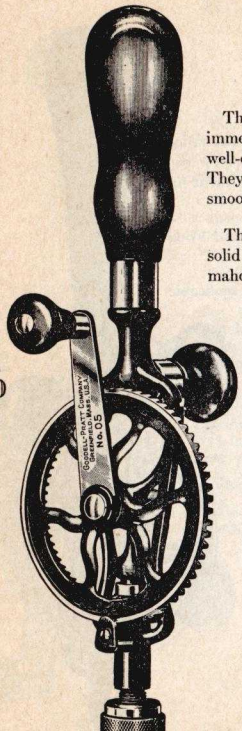

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Hand Drill
No. 05

Capacity 0 to ¼ inch

Patented August 13, 1895

This drill and those on the pages immediately following are built on strong, well-designed malleable iron frames. They are well balanced and run very smoothly.

The end, crank and side handles are solid hard wood with a fine lacquered mahogany finish.

The frame is malleable iron finished in glossy black enamel.

All gear teeth are machine cut. Large gear and steel pinion nickel plated. Large gear finished in red enamel with polished nickel edge.

Gear ratio 4.12 to 1.

The all-steel chuck has three hardened jaws for holding round shank drills 0 to ¼ inch in diameter. Polished nickel finish.

Length, 12⅛ inches. Net weight, 1⅜ pounds.

No drills furnished with this tool.

Price, each.....(WYFJO) $3.25

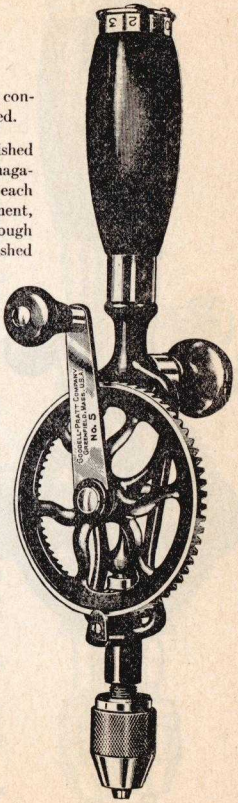
Packed one in a carton, 12¾ x 3 x 2¾ inches.

Weight, 1¾ pounds.

Hand Drill
No. 5

Capacity 0 to ¼ inch

Patented August 13, 1895



These drills are very similar in construction to those previously described.

The hard wood end handle, with polished mahogany finish, has a patented magazine for holding eight drill points, each in a separate numbered compartment, from which they can be released through a hole in the rotating cap. A polished hardwood side handle is provided.

The frame is malleable iron, black enameled.

The large gear and steel pinion are nickel plated, and the large gear is finished with red enamel. All teeth are machine cut. Gears are held together by a hardened steel guard that prevents slipping.

Gear ratio 4.12 to 1.

The chuck is all steel, with three hardened jaws for holding round shank drills 0 to ¼ inch in diameter. Bright nickel finish.

Length, 12 inches. Net weight, 1¾ pounds.

Eight drill points, $\frac{1}{16}$ to $\frac{1}{64}$ inch, are contained in the handle.

Price, each.....(WYFOJ) $3.95

Packed one in a carton, 12¾ x 3 x 2¾ inches.

Weight, 1¾ pounds.

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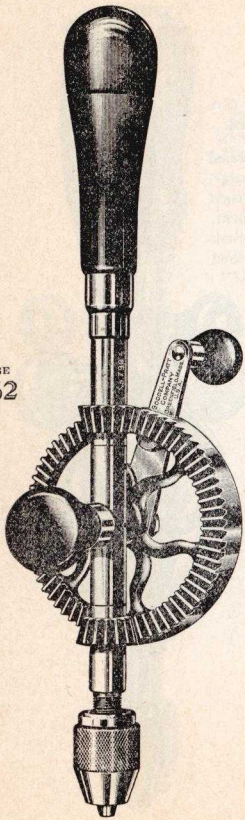

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Hand Drill
No. 790

Capacity 0 to ¼ inch

Patented August 13, 1895

This is as fine and convenient a drill as it is possible to make.

It is equipped with a nicely finished tropical wood end handle, which is hollow and has a screw cap, making a convenient receptacle for drills. The side and crank handles are hard wood with a nice mahogany finish.

The frame is made entirely of steel, beautifully polished and nickel plated.

All gear teeth are machine cut. The large gear has a wide nickel plated rim, convenient when starting small drills on delicate work. The rest of the gear is finished in red enamel. The two pinions are steel, nickel plated. The upper pinion forms an excellent bearing practically without friction.

Gear ratio 4.12 to 1.

The all-steel chuck has three hardened jaws for holding round shank drills 0 to ¼ inch in diameter. Chuck is polished and nickel plated.

Eight drill points, $\frac{3}{16}$ to $\frac{1}{64}$ inch in diameter, contained in the handle.

Overall length, 12½ inches. Net weight, 1½ pounds.

Price, each..... (ZEFIX) $4.00

Packed one in a carton, 12¾ x 3 x 2¾ inches.

Weight, 1¾ pounds.

Hand Drill
No. 54

Capacity 0 to ¼ inch

Patented August 13, 1895; September 30, 1890; November 17, 1891

A fine steel frame drill of ¼-inch capacity, fitted with a patented magazine handle for holding small diameter drills.

The end handle is hard wood with a mahogany lacquer finish. It has a rotating nickel plated metal cap with a hole through which the drills in the various compartments inside can be removed one at a time.

Crank and side handle are good size and have a lacquered mahogany finish.

The frame is all steel, nicely polished and nickel plated.

Both the large gear and two steel pinions are nickel plated and have machine cut teeth. The large gear is finished in red enamel with a polished edge.

Gear ratio 4.12 to 1.

The second pinion forms an excellent bearing, practically without friction.

All-steel chuck has three hardened steel jaws for holding round shank drills 0 to ¼ inch in diameter. Nicely polished and nickel plated.

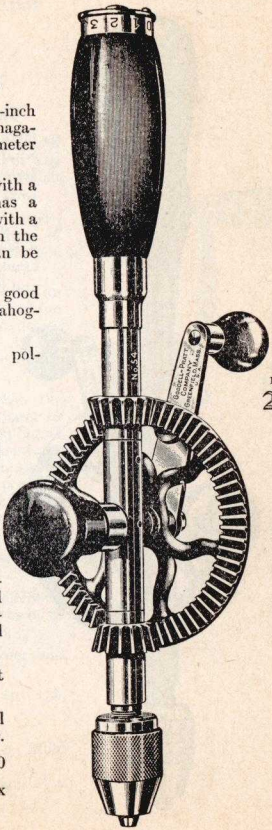
Length, 12 inches. Net weight, 1⅜ pounds.

Equipped with eight drill points $\frac{1}{16}$ to $\frac{1}{64}$ inch in diameter.

Price, each..... (YAGIZ) $4.50

Packed one in a carton, 12¾ x 3 x 2¾ inches.

Weight, 1⅝ pounds.



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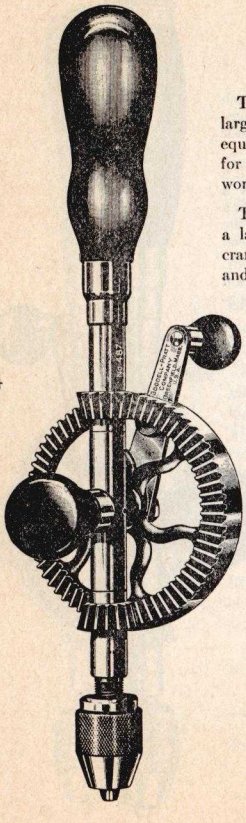

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Hand Drill
No. 487

Capacity 0 to ¼ inch
Patented August 13, 1895

The wide nickel plated face of the large gear with which this drill is equipped will be found most convenient for starting small drills and for delicate work.

The end handle is hard wood with a lacquered mahogany finish. The crank and side handles are ample size and finished to match.

All-steel frame nicely polished and nickel plated.

Gear teeth are machine cut. Large gear and two steel pinions are nickel plated. Large gear is red enameled except the face which is buffed nickel.

Gear ratio 4.12 to 1.

The upper pinion forms an excellent bearing, practically without friction.

The chuck is all steel with three hardened jaws holding round shank drills 0 to ¼ inch in diameter.

Length, 12 inches. Net weight, 1¼ pounds.

No drills furnished with this tool.

Price, each.....(YOTAB) $3.75

Packed one in a carton, 12¾ x 3 x 2¾ inches.

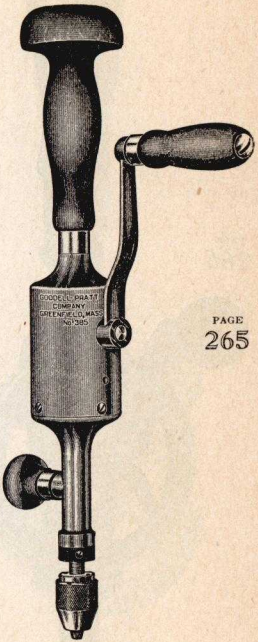
Weight, 1½ pounds.

High Speed Hand Drill

No. 385

Capacity 0 to ¼ inch

Patented August 13, 1895



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This hand drill is particularly useful for wood finishers, floor layers, or any one else who must drill a large number of small holes very rapidly.

Instead of the usual hand drill speeds, this drill has the very high speed of seven revolutions of the chuck to one turn of the crank.

The gears are inclosed in an aluminum casing to protect them from dirt or breakage, and packed in grease to insure proper lubrication. All the gears are machine cut and carefully fitted.

The large end handle enables the tool to be used either as a hand or breast drill. The long drop-forged crank with a large crank handle insures ample power. The aluminum casing makes the drill as light as possible. Ball bearings make the spindle run easily.

All the aluminum parts are polished and the steel parts are polished and nickel plated.

The three-jawed chuck holds round shank drills from 0 to ¼ inch in diameter. Bright nickel finish.

The tool is 15½ inches long and weighs 2¼ pounds.

No drill points furnished with this tool.

Price, each..... ....(YODLE) $7.00

Packed one in a carton, 15¾ x 3½ x 2¾ inches.

Weight, 2⅝ pounds.

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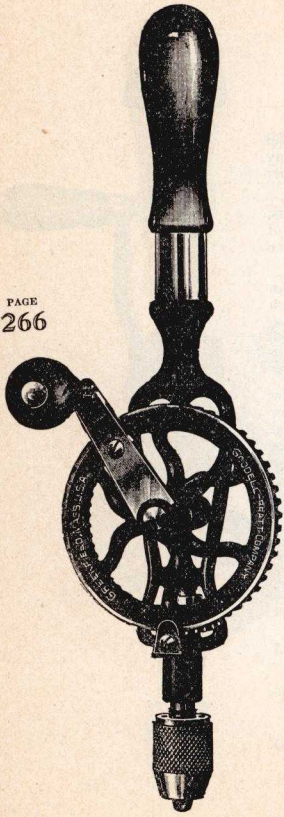


Hand Drill

No. 655

Capacity 0 to ¼ inch

Patented August 13, 1895

This tool represents an unusual value in a drill of ¼-inch capacity. The frame is a little lighter than the preceding drills and no side handle is provided and economies in finish have been made. Its performance is excellent.

It is equipped with a comfortable solid hard wood end handle with mahogany finish and a crank handle to match.

The frame is black enameled malleable iron.

Gear teeth are machine cut. Large gear finished in red enamel. Pinion is steel.

Gear ratio 4.15 to 1.

The all-steel chuck has three hardened jaws for holding round shank drills 0 to ¼ inch in diameter.

Length, 11¾ inches. Net weight, 15 ounces.

No drills furnished with this tool.

Price, each..... (ZAETH) $1.45

Packed one in a carton, 8 x 3½ x 1⅞ inches.

Weight, 1¼ pounds.

Hand Drill

No. 53

Capacity 0 to 5/32 inch

Patented August 13, 1895

This drill is equipped with a wide faced gear that can be used in place of the crank handle for starting small diameter drills and for delicate work.

The end handle is tropical wood with a screw cap providing a convenient place for keeping drills.

The all-steel frame is nicely polished and nickel plated.

Gear teeth are machine cut. Large gear is finished in red enamel and has a ½-inch wide nickel plated face. The two steel pinions are nickel plated.

The gear ratio is 4.15 to 1.

Upper pinion forms a practically frictionless bearing.

The chuck is all steel with three hardened jaws for holding round shank drills 0 to 5/32 inch in diameter. Bright nickel finish.

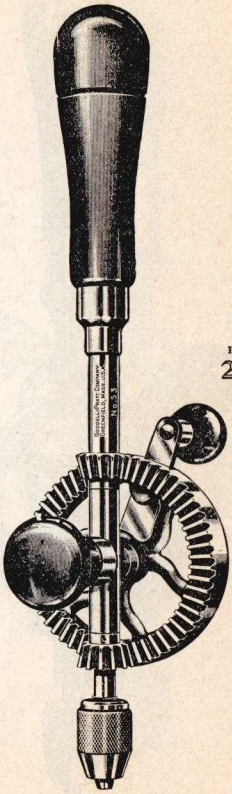
Length, 11½ inches. Net weight, 1⅛ pounds.

Eight drill points 1/16 to 11/64 inch in diameter regular equipment.

Price, each..... (YAGBO) $3.60

Packed one in a carton, 11⅞ x 3 x 2½ inches.

Weight, 1⅜ pounds.



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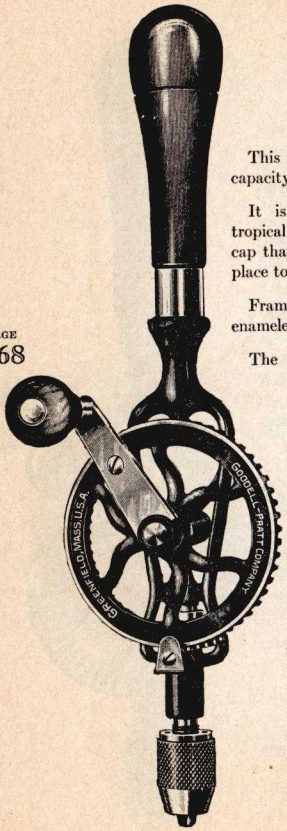

Hand Drill

No. 4½

Capacity 0 to 5/32 inch

Patented August 13, 1895

This has always been a favorite small capacity drill.

It is equipped with a comfortable tropical wood end handle with a screw cap that provides a convenient and safe place to hold drills.

Frame is malleable iron nicely black enameled.

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The large gear and steel pinion are nickel plated. The large gear is finished in red enamel with a polished edge.

The gear ratio is 4.15 to 1.

The chuck is made of steel and has three hardened jaws for holding round shank drills 0 to $\frac{5}{32}$ inch in diameter.

Length, $11\frac{7}{8}$ inches. Net weight, 1 pound.

Eight drill points $\frac{1}{16}$ to $\frac{1}{4}$ inch in diameter provided with each tool.

Price, each..... (WYFEG) $2.70

Packed one in a carton, $11\frac{7}{8}$ x 3 x $2\frac{1}{2}$ inches.

Weight, $1\frac{1}{4}$ pounds.

Hand Drill

No. 49

Capacity 0 to 5/32 inch

Chuck Patented August 13, 1895

This is a small drill of very good quality at an extremely moderate price.

The handle is hollow brass, white nickeled. It can be quickly unscrewed and used for holding drills. Frame is malleable iron, black enameled.

Gears are nickel plated to prevent rusting. All teeth are machine cut. The gears are held in mesh by a steel guard which prevents slipping.

All-steel chuck, with three hardened jaws, holds round shank drills 0 to $\frac{5}{32}$ inch in diameter. Bright nickel finish.

Length, $10\frac{3}{8}$ inches. Net weight, 14 ounces.

No drill points furnished with this tool.

Price, each..... (YAFAV) $1.80

Packed one in a carton, 8 x $3\frac{1}{2}$ x 2 inches.

Weight, 1 pound.

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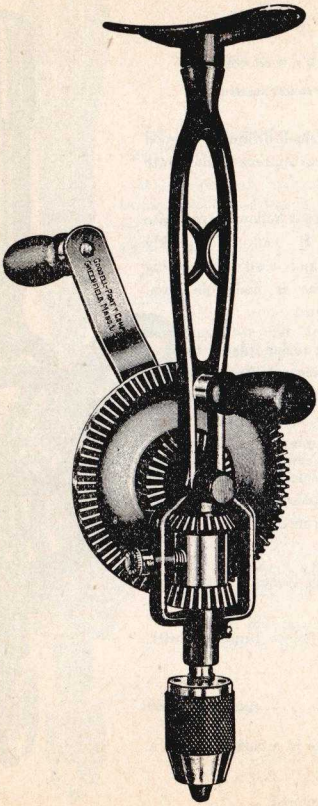

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Breast Drill

No. 6

Capacity 0 to ½ inch

Patented August 13, 1895; March 31, 1896

This is the world's standard breast drill. Goodell-Pratt No. 6 is sold in every world market and used for comparison of quality, performance and value. Particular attention is called to the provision to prevent wear of the spindle, the accurately machine-cut teeth on the steel pinions and large gear, the trouble-proof clutch and change speed mechanism and the many other fine features.

The breast plate is comfortably shaped and adjustable for position. It is nicely finished in red and black enamel.

The frame is malleable iron finished in glossy black enamel.

Side and crank handles made of hard wood with lacquered mahogany finish. Both are fitted with nickel plated ferrules. The crank and clutch shell between the pinions are polished and nickel plated.

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All teeth on both the two steel pinions and the large gear are machine cut. The large gear is finished in Goodell-Pratt red enamel with a polished edge.

Two speeds are obtained by turning the shifter knob marked "Fast" and "Slow" at the side of the frame. The gear ratios are—high speed 3.56 to 1; low speed 1.48 to 1.

The accurately turned steel spindle has a hardened end that runs in a hardened steel cone bearing set solidly in the frame.

The chuck is made entirely of steel with three hardened jaws for holding round shank drills from 0 to ½ inch in diameter. It is nicely polished and nickel plated.

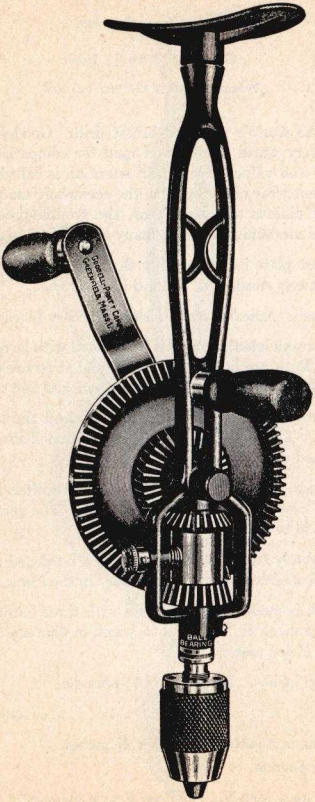
Length, 16 inches. Net weight, 4½ pounds.

Price, each..... (WYGGA) $6.20

Packed one in a carton, 17 x 5⅜ x 2¾ inches.

Weight, 5 pounds.

This drill used with No. 277 Feed Frame (page 277) makes a serviceable automatic feed bench drill.


GOODELL-PRATT CO.
GREENFIELD, MASS.
BALL BEARING

Breast Drill

No. 6A

Capacity 0 to ½ inch

Patented August 13, 1895; March 31, 1896

Identical to No. 6 on the preceding pages but with a ball thrust bearing on the spindle to take care of the feed pressure. This makes the drill run easier on heavy work and reduces the wear greatly, increasing the useful life of the drill.

The breast plate is adjustable and nicely finished in red and black enamel.

The malleable iron frame is finished in glossy black enamel.

Side and crank handles are made of hard wood with a mahogany lacquer finish. Crank and clutch shell are polished and nickel plated.

All teeth on both the two steel pinions and the large gear are machine cut. The large gear is finished in Goodell-Pratt red enamel with a polished edge.

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Two speeds are obtained by turning the shifter knob marked "Fast" and "Slow" at the side of the frame. The gear ratios are—high speed 3.56 to 1; low speed 1.48 to 1.

The accurately turned steel spindle has a hardened end that runs in a hardened steel cone bearing set solidly in the frame and a ball thrust bearing.

The chuck is made entirely of steel with three hardened jaws for holding round shank drills from 0 to ½ inch in diameter. It is nicely polished and nickel plated.

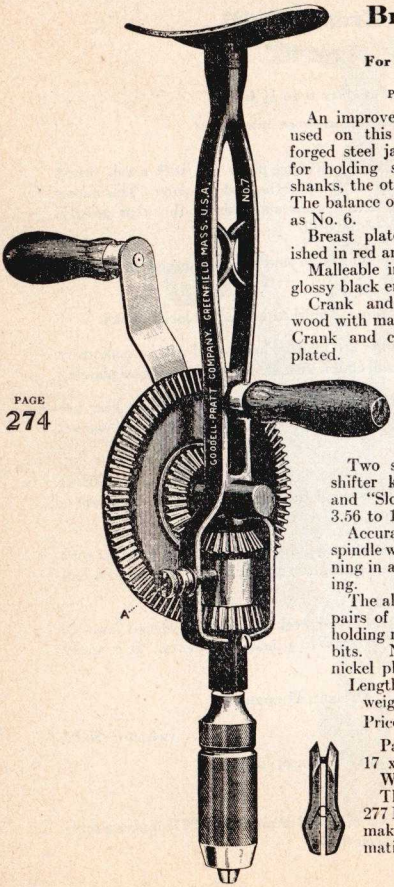
Length, 16 inches. Net weight, 4½ pounds.

Price, each.....(WYGHE) $6.50

Packed one in a carton, 17 x 5⅜ x 2¾ inches.

Weight, 5 pounds.

This drill used with No. 277 Feed Frame (page 277) makes a serviceable automatic feed bench drill.



Breast Drill
No. 7
For Round or Square Shanks

Patented March 31, 1896

An improved bit brace chuck is used on this drill. Two sets of forged steel jaws are supplied, one for holding square or bit brace shanks, the other for round shanks. The balance of the drill is the same as No. 6.

Breast plate is adjustable. Finished in red and black enamel.

Malleable iron frame finished in glossy black enamel.

Crank and side handles hard wood with mahogany lacquer finish. Crank and clutch shell are nickel plated.

All teeth are machine cut. Pinions are steel. Large gear finished in red enamel with polished edge.

Two speeds controlled by shifter knob marked "Fast" and "Slow." High speed ratio 3.56 to 1; low speed 1.48 to 1.

Accurately turned steel spindle with hardened end running in a hardened cone bearing.

The all-steel chuck has two pairs of forged steel jaws for holding round or square shank bits. Nicely polished and nickel plated.

Length, 17½ inches. Net weight, 4¾ pounds.

Price, each. (WYHHA) $6.60

Packed one in a carton, 17 x 5⅜ x 2¾ inches.

Weight, 5¼ pounds.

This drill used with No. 277 Feed Frame (page 277) makes a serviceable automatic feed bench drill.

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Breast Drill

No. 20

Capacity 0 to ½ inch

Patented August 13, 1895; March 31, 1896

This drill is the same as No. A described on a preceding page but equipped with a saddle type breast plate and a heavy grip side handle for heavy duty service.

The breast plate is 9½ inches wide with a broad leather strap affording a comfortable rest for applying pressure. Black enamel finish.

The malleable iron frame is nicely black enameled.

Crank handle is mahogany lacquered hard wood, while the side handle is of a heavy grip pattern.

All gear teeth are machine cut. Pinions are steel. Large gear finished in red enamel with polished edge.

Two speeds changed by turning shifter knob. High speed ratio 3.56 to 1; low speed 1.48 to 1.

Accurately turned steel spindle with ball thrust bearing and hardened steel end running in hardened cone bearing.

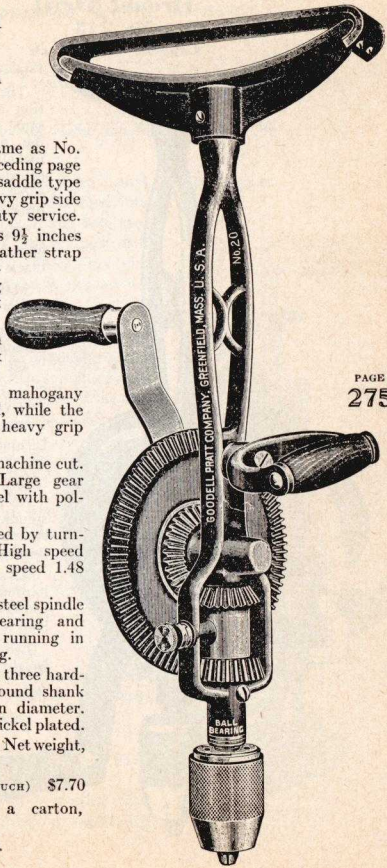
All steel chuck has three hardened jaws holding round shank drills 0 to ½ inch in diameter. Nicely polished and nickel plated.

Length, 18½ inches. Net weight, 6¼ pounds.

Price, each..... (WYUCH) $7.70

Packed one in a carton, 17 x 5⅜ x 2¾ inches.

Weight, 6¾ pounds.

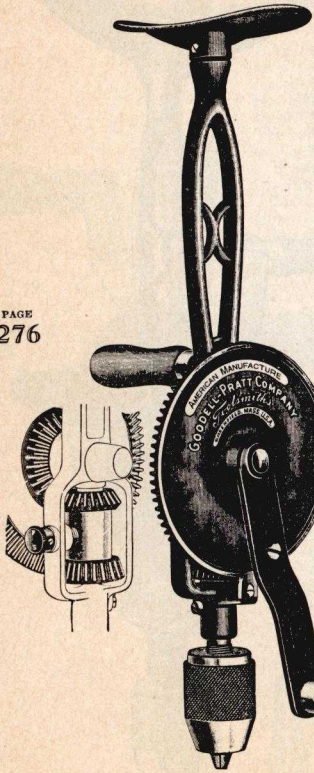


Breast Drill

No. 245

Capacity 0 to ½ inch

Patented August 13, 1895; March 31, 1869



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The design and construction of this drill are the same as No. 6 on a preceding page. By omitting nickel plate and making other economies in finish a substantial reduction in price is effected.

The breast plate is adjustable and finished in black enamel.

Malleable iron frame with glossy black enamel finish.

Handles are hard wood mahogany finished.

All gear teeth machine cut. Steel pinions. Large gear finished in red enamel.

Two speeds changed by turning shifter knob. High speed ratio 3.56 to 1; low speed 1.48 to 1.

Accurately turned steel spindle with hardened end running in a hardened cone bearing.

All steel chuck with three hardened jaws for holding round shank drills 0 to ½ inch in diameter.

Length, 16 inches. Net weight, 4½ pounds.

Price, each.. (YEZIX) $5.50

Packed one in a carton, 17 x 5⅜ x 2¾ inches. Weight, 5 pounds.

Automatic Feed Frame

No. 277

Patented June 30, 1908

Fitting Breast Drills Nos. 6, 6A, 7, and 245

When any of the Goodell-Pratt breast drills mentioned above is fastened into this device by means of the bolt provided it is converted into a bench drill with automatic feed. The lower clip shown in the illustration is not needed and is no longer used.

Two different ratios of feed can be obtained by turning an adjusting screw provided for that purpose; combined with the two speeds on the breast drill, this makes four different feeds available.

The automatic feed can be instantly thrown out and the table raised or lowered by the hand feed. The extreme distance between the chuck and the table is about 9 inches, and the tool will drill to the center of a 5-inch circle.

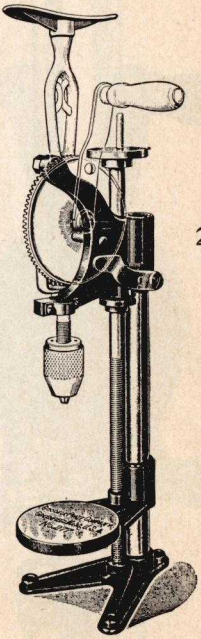
Iron parts are finished in black enamel, all steel parts are polished.

Net weight, 12 pounds.

No breast drills are included with these feed frames. They must be purchased separately.

Price, each..... (YIDOJ) $8.80

Each one packed in a wooden case, 23 x 9 x 8 inches. Shipping weight, 18¾ pounds.



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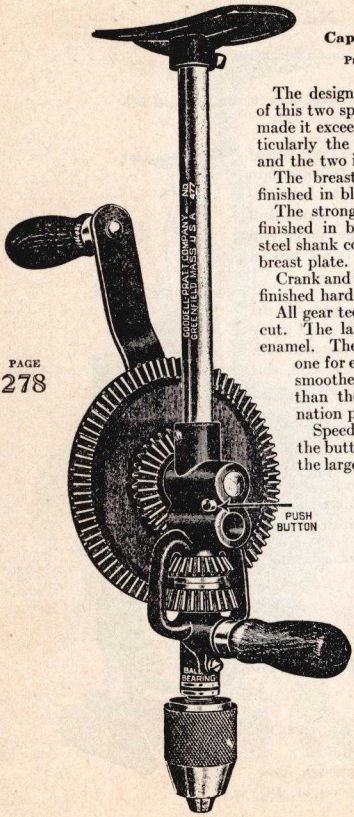
Breast Drill

No. 477

Capacity 0 to ½ inch

Patented August 13, 1895;
November 26, 1912



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The design, workmanship and finish of this two speed, steel shank drill have made it exceedingly popular. Note particularly the quick, positive gear shift and the two individual steel pinions.

The breast plate is adjustable and finished in black enamel.

The strong, compact frame is nicely finished in black enamel. A polished steel shank connects the frame with the breast plate.

Crank and side handles are mahogany finished hard wood.

All gear teeth are accurately machine cut. The large gear is finished in red enamel. The use of two steel pinions—one for each speed—makes a much smoother running, longer lived drill than those using a single combination pinion for both speeds.

Speeds are changed by pushing the button in the frame, pulling out the large gear and axle and inserting it in the other bearing. A spring lock holds it in place. Gear ratios 3.56 to 1 and 1.48 to 1.

The steel spindle is equipped with a ball thrust bearing insuring easy operation.

All-steel chuck has three hardened jaws for holding round shank drills from 0 to ½ inch in diameter. Chuck is nicely polished.

Length, 16½ inches. Net weight, 4⅝ pounds.

Price, each . . . (YORZE) $4.80

Packed one in a carton, 10¼ x 5¼ x 3⅛ inches.

Weight, 5 pounds.

Breast Drill

With Level Attachment

No. 483

Capacity 0 to ½ inch

Patented August 13, 1895; November 26, 1912

This drill is the same as No. 477 on the preceding page with the addition of a small level set in the steel shank for convenience in starting drills accurately.

The breast plate is adjustable and finished in black enamel.

Strong, compact frame, black enameled.

Accurately set level vial located in the polished steel shank that connects frame and breast plate.

Crank and side handles hard wood with good mahogany lacquer finish.

All gear teeth are machine cut. Large gear finished in red enamel. Two steel pinions, one for each speed.

Two speeds changed by pushing button at side of frame, withdrawing large gear and shaft and inserting in other bearing. Gear ratios—3.56 to 1 and 1.48 to 1.

Steel spindle is equipped with ball thrust bearing.

All-steel chuck has three hardened steel jaws for holding 0 to ½ inch round shank drills. Nicely polished.

Length, 16½ inches. Net weight, 4½ pounds.

Price, each..... .(YOSOD) $5.00

Packed one in a carton, 10¼ x 5¼ x 3⅜ inches.

Weight, 5 pounds.

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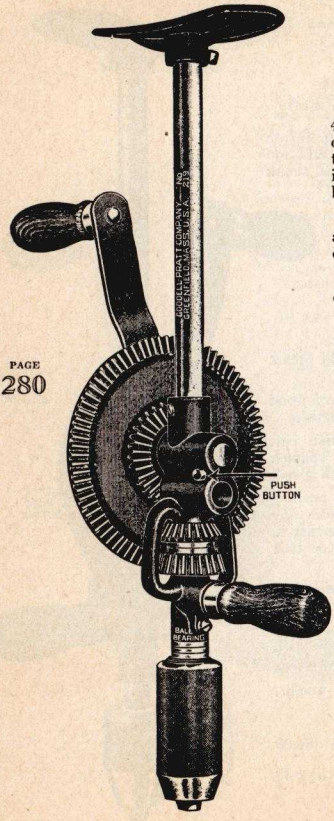

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Breast Drill

No. 219

For Square Shank Drills

Patented November 26, 1912

Same in all respects as No. 477 with the exception of the chuck which is equipped with two forged steel jaws for holding drills with square or bit brace shanks.

The breast plate is adjustable and finished in black enamel.

Strong, compact frame, black enameled.

Crank and side handles hard wood with good mahogany lacquer finish.

All gear teeth are machine cut. Large gear finished in red enamel. Two steel pinions, one for each speed.

Two speeds changed by pushing button at side of frame, withdrawing large gear and shaft and inserting in other bearing. Gear ratios 3.56 to 1 and 1.48 to 1.

Steel spindle is equipped with ball thrust bearing.

All-steel chuck has a long finely knurled shell and two forged steel jaws for holding square shank bits, reamers, etc. Chuck nicely polished.

Length, $16\frac{1}{2}$ inches. Net weight, $4\frac{3}{4}$ pounds.

Price, each.. (YERUS) $4.60

Packed one in a carton $10\frac{1}{4}$ x $5\frac{1}{4}$ x $3\frac{1}{8}$ inches.

Weight, $5\frac{1}{4}$ pounds.

Breast Drill

No. 0477

Capacity 0 to ½ inch

Patented August 13, 1895; November 26, 1912

By effecting economies in finish it is possible to offer this drill at a very attractive price. Aside from the finish this drill is identical to No. 477.

Breast plate is adjustable and finished in black enamel.

Strong, compact frame, black enameled.

Hardwood crank and side handle with mahogany finish.

Gear teeth are machine cut. Large gear finished in red enamel. Two steel pinions. Gear ratios 3.56 to 1 and 1.48 to 1.

Speeds changed by pushing button at side of frame, withdrawing large gear and shaft and inserting in the other bearing.

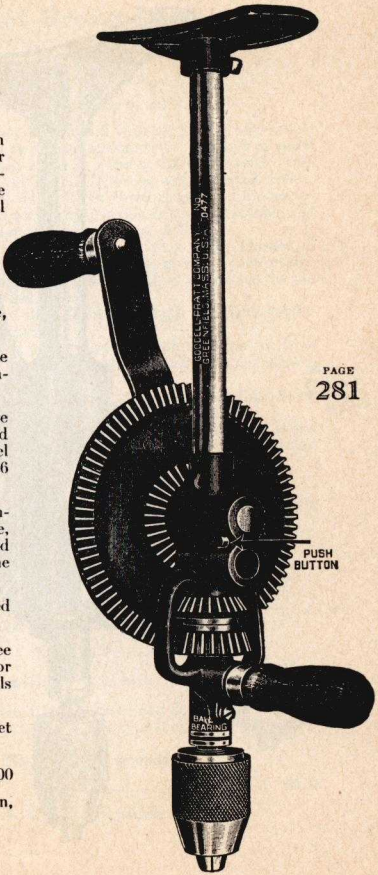
Steel spindle equipped with ball thrust bearing.

All steel chuck has three hardened steel jaws for holding round shank drills 0 to ½ inch in diameter.

Length, 16½ inches. Net weight, 4½ pounds.

Price, each..(YORZO) $3.00

Packed one in a carton, 10½ x 5¼ x 3⅛ inches. Weight, 5 pounds.



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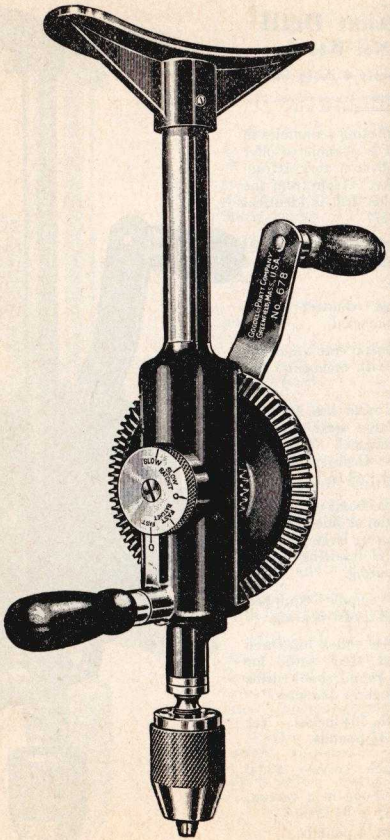
Goodell-Pratt Company
Greenfield, Mass. U.S.A.
No. 678
SLOW
FAST

Ratchet Breast Drill

No. 678

Capacity 0 to ½ inch

Patented March 31, 1896; July 24, 1923

A very sturdy, compact breast drill with an ingeniously simple and powerful ratchet and two speed mechanism. Changes of speed and ratchet action are both made by turning the large knurled dial on the back of the frame, giving the following actions: Fast; Slow; Fast Right Hand ratchet; Slow Right Hand ratchet. Elimination of the little used left hand actions makes this drill as dependable and trouble-proof as the ordinary two speed breast drill.

The breast plate is cast from aluminum alloy nicely finished in ebony and red enamel. It is 6¾ inches wide, giving a comfortable bearing for heavy drilling. The breast plate is connected to the frame by a nickel plated steel tube.

The frame is aluminum alloy of great strength and light weight. It is finished in ebony enamel.

The large gear and steel pinions have all teeth machine cut from solid blanks. Pinions inclosed. Large gear is finished in red enamel. Gear ratios 3.56 to 1 and 1.48 to 1.

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The accurately lathe-turned spindle runs in ball bearings which take up the end thrust. The ball bearing is adjustable.

The all-steel chuck has three hardened jaws for holding round shank drills from 0 to ½ inch diameter. Chuck nicely polished and nickel plated.

Length, 17½ inches. Net weight, 4⅜ pounds.

Price, each..... (ZAKWE) $8.80

Packed one in a carton, 17 x 5¼ x 3¼ inches.

Weight, 4⅞ pounds.

Ratchet Breast Drill

No. 677

Capacity 0 to ½ inch

Exactly the same as No. 678 illustrated and described on these pages, but with a saddle type breast plate same as illustrated.

Length, 18¼ inches. Net weight, 4⅝ pounds.

Price, each..... (ZAKVA) $9.70

Packed one in a carton, 17 x 5¼ x 3¼ inches.

Weight, 5⅛ pounds.

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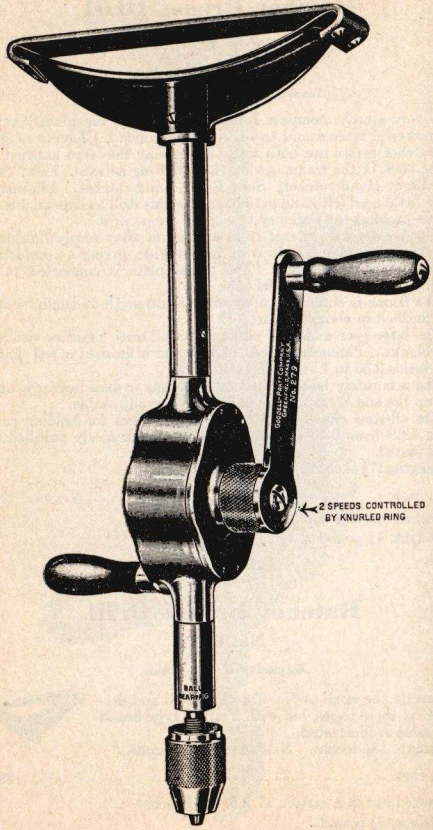


High Speed Breast Drill

No. 279

Capacity 0 to ½ inch

Patented March 31, 1896; October 19, 1915

This breast drill is a marvel of mechanical ingenuity and expert workmanship. The unusual construction embodies features that are invaluable to any one having a large amount of drilling to do.

Instead of the usual breast drill speeds, this tool has the very high speed of seven revolutions of the chuck to one turn of the crank. The slow speed is two to one.

The speeds are changed, or the spindle locked for opening and closing the chuck, by simply turning the knurled ring between the crank handle and the gear casing.

The gears are all steel and are inclosed in a polished aluminum casing and packed in heavy grease, are all machine cut and carefully fitted. PAGE 285

The construction of this tool is up to date in every particular, with many conveniences for the operator. The saddle breast plate has an aluminum frame with leather strap, which is very much easier on the chest than the old style iron head. The hollow steel tubes and the aluminum casing make the drill as light as possible. Ball bearings make the spindle run easily.

All the aluminum parts are polished and the steel parts are polished and nickel plated.

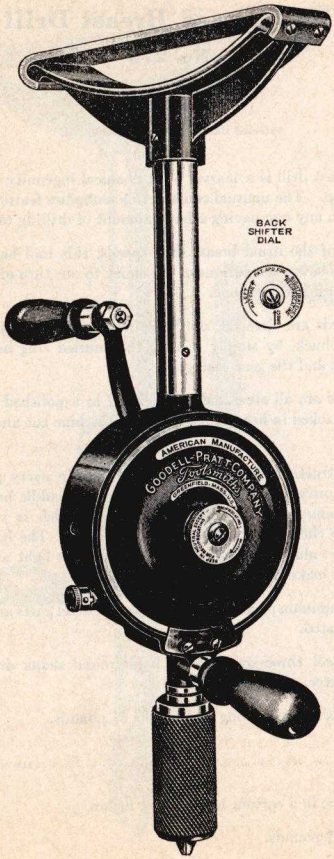
The all-steel three-jawed chuck holds round shank drills 0 to ½ inch in diameter. Full nickel finish.

The tool is 20 inches long and weighs 6⅛ pounds.

Price, each..... (YIDYL) $13.20

Packed one in a carton, 18¾ x 5 x 3½ inches.

Weight, 6¾ pounds.


BACK
SHIFTER
DIAL
AMERICAN MANUFACTURED
GOODELL-PRATT COMPANY
Tool Smiths
GREENFIELD, MASS.

Ratchet Breast Drill
No. 186
Capacity 0 to ½ inch

Patented March 31, 1896; September 16, 1924

This drill is provided with a new ratchet mechanism of great simplicity and strength, making it as dependable a tool as the ordinary breast drill, without excessive weight.

The ratchet teeth are broached in the hubs of the two large gears. The ratchet dogs are made of hardened tool steel set in the steel shaft in such a way that the force exerted on them is almost entirely compressive, making them unbreakable. We believe this to be the most dependable ratchet mechanism ever devised.

Four actions at either "Fast or Slow" speed are available as follows: Right Hand ratchet; Left Hand ratchet; Reciprocating or Double ratchet, and Direct. Change of action is controlled by the knurled dials on either end of the shaft. Change of speed is controlled by the shifter knob at the side of the frame.

The breast plate is of the saddle type with a broad leather strap, insuring comfort. It is connected to the black enameled aluminum frame by a nickel plated steel tube.

The gears have machine-cut teeth which mesh closely and quietly. The large gears are finished in red enamel. The steel pinions are entirely inclosed. PAGE 287

The accurately turned steel spindle runs in ball bearings. It has a hardened end that runs in a hardened steel cone bearing.

The extra heavy all-steel chuck has three hardened jaws holding round shank drills from 0 to ½ inch in diameter. Nicely polished and nickeled.

Length, 19 inches. Net weight, 7½ pounds.

Price, each ..... (YEKKO) $14.30

Packed one in a carton, 18½ x 5⅞ x 4⅛ inches.

Weight, 8½ pounds.

Ratchet Breast Drill
No. 187
For Square Shank Drills

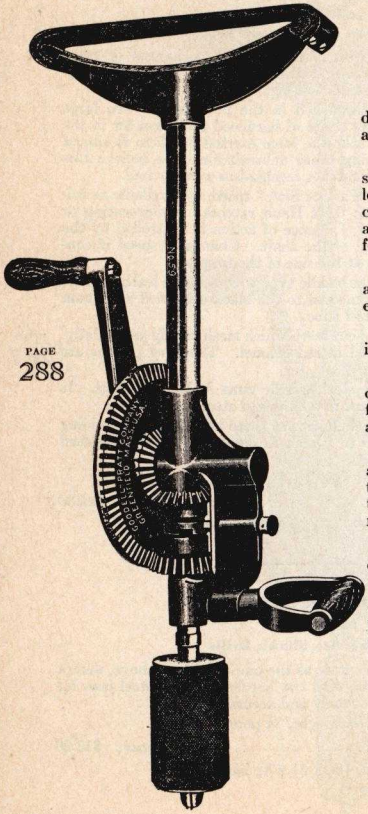
This drill is exactly the same as the one described above, except the chuck, which is all steel, with two hardened forged steel jaws for holding square shank drills firmly and accurately.

Length, 18¾ inches. Net weight, 7½ pounds.

Price, each ..... (YEKMY) $13.20

Packed one in a carton, 18½ x 5⅞ x 4⅛ inches.

Weight, 8½ pounds.



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Giant Breast Drill

No. 59

Capacity 0 to ¾ inch

Patented August 13, 1895

Built for heavy duty drilling where power is not available.

The breast plate is of the saddle type with a broad leather strap on which chest pressure can be applied without discomfort.

The frame is very strong and finished in black enamel.

A heavy grip side handle is provided.

Gears all have machine cut teeth. Large gear finished in red enamel as are the hubs of the pinions.

Two speeds are available and are easily shifted by turning the shifter knob at the side of the frame. Gear ratios 3 to 1 and 1 to 1.

Spindle is steel and runs on ball bearings.

Powerful all-steel chuck with three hardened jaws holding round shank drills 0 to ¾ inch in diameter.

Length, 22½ inches. Net weight, 12½ pounds.

Price, each. (YAHUD) $17.60

Packed one in a wooden box, 14½ x 7½ x 6¼ inches.

Weight, 16½ pounds.

Breast Drill
No. 56

Capacity 0 to ½ inch

Patented August 13, 1895

A steel frame, single speed drill that sells at a very low price and that can be counted on for an abundance of dependable service. Note that it is equipped with two steel pinions.

The breast plate is adjustable and finished in black enamel.

Drill is mounted on a well polished all-steel frame.

Handles are hard wood with mahogany finish.

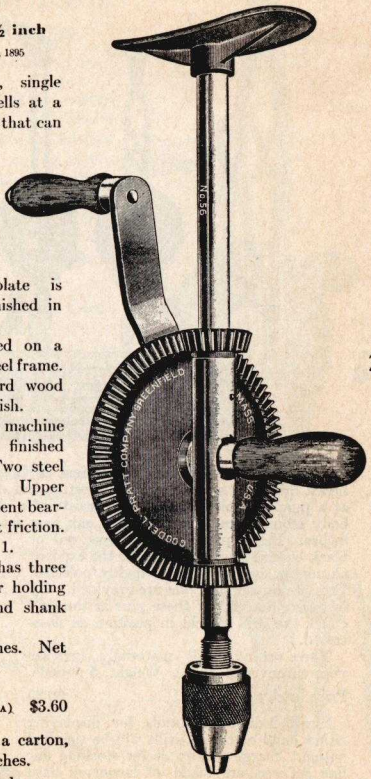
Gear teeth are machine cut. Large gear finished in red enamel. Two steel pinions provided. Upper one forms an excellent bearing almost without friction. Gear ratio 3.56 to 1.

All-steel chuck has three hardened jaws for holding 0 to ½ inch round shank drills.

Length, 16 inches. Net weight, 4 pounds.

Price, each (YAGWA) $3.60

Packed one in a carton, 16 x 6¼ x 2½ inches. Weight, 4½ pounds.



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Drill Display Stands

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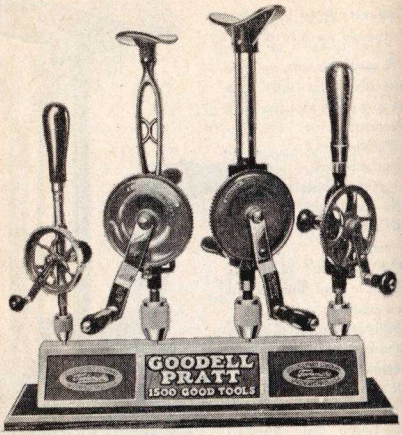


Dealers stocking a good assortment of Goodell-Pratt hand and breast drills can secure this very effective and striking display stand at a purely nominal price. It consists of a substantial aluminum body mounted on a well finished oak base measuring 20½ x 7 x inches. Front panels have glossy red or black enamel background while the exposed aluminum around them is highly polished. Four removable steel pins are provided. By fastening one end of these pins in the drill chuck the drill is held in position as illustrated.

These stands will materially increase your turnover of drills. Weight, 5 pounds.

Price, each net $0.25

Small individual stands for displaying either hand or breast drills will be supplied without charge to any dealer stocking our line. These are made of lacquered hard wood, 3¼ x 3¼ inches, with a pin up through the center to fasten into the drill chuck.

Combination Breast and Chain Drills

Patented August 13, 1895; March 31, 1896

These combination tools consist of one of the chain drills shown on page 293, with a special long spindle attached to one of our regular malleable iron frame breast drills. This brings the work nearer to the operator than is possible when the shank of a chain drill is inserted in a breast drill chuck.

The breast drill has two speeds, cut gears, and other improvements; and the chain drill has ball bearings and an automatic feed.

Equipped with three feet of strong steel sash chain.

Length over all, $19\frac{3}{4}$ and $20\frac{1}{4}$ inches. Weight, $6\frac{1}{4}$ pounds.

No. 7316 with three-jaw chuck for holding 0 to $\frac{1}{2}$ inch round shank drills.

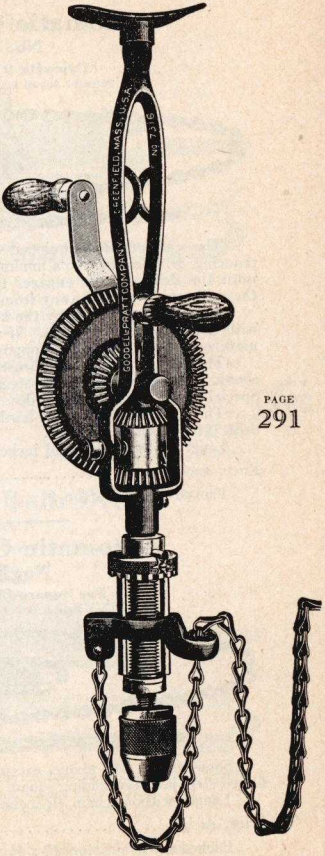
Price, each..... (ZOSUZ) $9.35

No. 7307 with two-jaw chuck for holding square or bit brace shanks.

Price, each..... (ZOSTA) $8.25

Packed one in a carton, 21 x $5\frac{1}{2}$ x $3\frac{1}{4}$ inches.

Weight, $7\frac{1}{4}$ pounds.



No. 7316

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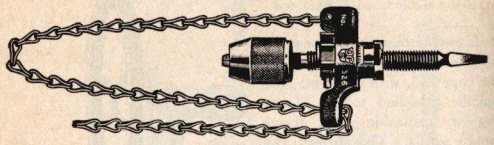
Automatic Chain Drill
No. 326

Capacity 0 to ½ inch

Patented August 13, 1895; October 25, 1910



This chain drill is equipped with a sensitive automatic feed, reducing drill breakage to a minimum. The feed does not operate until the drill actually engages the work. This permits running the drill rapidly to and away from the work.

The feed is governed by the knurled nut on the frame, marked with different drill diameters. If a ¼-inch drill is being used the ¼ mark on the dial should be opposite the fair mark on the frame.

The spindle has a ball thrust bearing and a hardened square shank. Three feet of strong steel chain supplied with each drill. Special lengths furnished to order.

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The steel chuck has three hardened jaws for holding round shank drills 0 to ½ inch in diameter.

Length without chain, 9¼ inches. Weight, 3¼ pounds net.

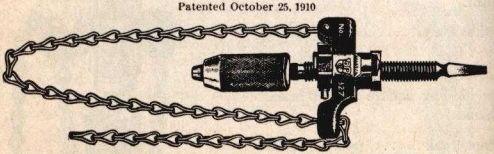
Price, each.....(YIMPE) $5.50

Packed one in a carton, 9¼ x 4½ x 3½ inches. Weight, 3½ pounds.

Automatic Chain Drill
No. 327

For Square Shank Drills

Patented October 25, 1910



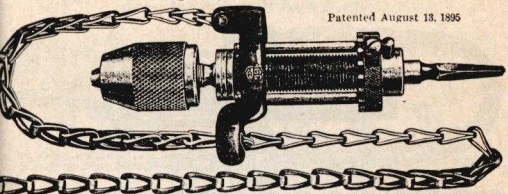
Same as No. 326 above, except for the chuck, which has two forged steel jaws for holding square shank drills.

Length without chain, 9⅜ inches. Weight, 3¼ pounds net.

Price, each.....(YIMRO) $5.30

Packed one in a carton, 10 x 4½ x 3½ inches. Weight, 3¾ pounds.

Automatic Chain Drill
No. 316
Capacity 0 to ½ inch



This drill has a very simple and serviceable automatic feed device that has proven its value by many years of satisfactory use. It is not adjustable, however, like those just shown.

The spindle is equipped with a ball thrust bearing and has a hardened square shank. Three feet of strong steel chain supplied with each drill. Special lengths furnished to order. The frame of this tool is black enameled. The steel chuck has three hardened jaws for holding round shank drills 0 to ½ inch in diameter.

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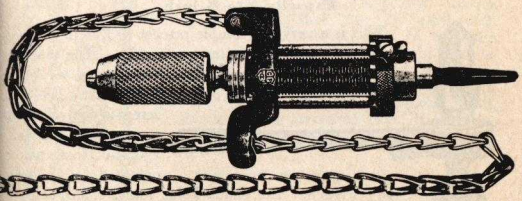
The tool is 9 inches long and weighs 2½ pounds net.

Price, each..... (YIKPO) $4.50

Packed one in a carton, 9¾ x 4¾ x 2½ inches. Weight, 2¾ pounds.

Automatic Chain Drill
No. 307
For Square Shank Drills



Same as No. 316 above, with the exception of the chuck, which has two forged steel jaws for holding square shank drills.

The tool is 9¾ inches long and weighs 2¾ pounds net.

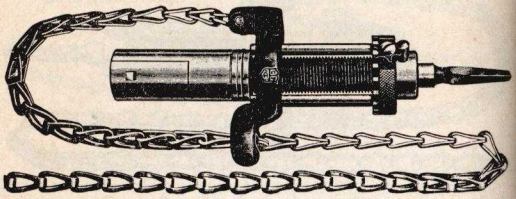
Price, each..... (YIJAK) $4.30

Packed one in a carton, 9¾ x 4¾ x 2¾ inches. Weight, 3 pounds.

Automatic Chain Drill

No. 308

For ½ inch Round Shanks only



This drill is identical with the Nos. 316 and 307 illustrated and described on the preceding page, with the exception of the chuck, which consists of a socket with a hardened steel set screw for holding ½-inch round shanks only.

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The tool is 7½ inches long and weighs 2¼ pounds net.

Price, each.....(YIJLE) $3.50

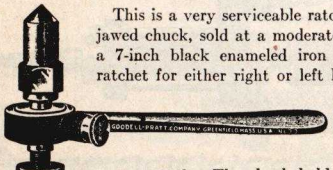
Packed one in a carton, 8¼ x 4¾ x 2¼ inches.

Weight, 2½ pounds.

Ratchet Drill

No. 99

Capacity 0 to ⅜ inch



This is a very serviceable ratchet drill with a three-jawed chuck, sold at a moderate price. The tool has a 7-inch black enameled iron handle and a strong ratchet for either right or left hand work. The feed screw is controlled by a case-hardened hexagon nut that can be operated by an ordinary wrench. The chuck holds round shank drills 0 to ⅜ inch in diameter.

The tool is 6 inches high and weighs 1¾ pounds net.

Price, each.....(YAWPE) $4.40

Packed one in a carton, 8¼ x 6¼ x 2½ inches.

Universal Ratchet Handle
No. 107
With Five Wrench Sockets

This tool has an iron handle with a strong ratchet that can be used for either right or left hand work. The head runs on ball bearings. The socket has a square taper hole for holding the five malleable iron nut wrenches furnished with each tool.

Socket Nos.	Size	Set Screws	Sq. Head Cap Screws	Hex. Head Cap Screws	Sq. and Hex. Nuts	Lag Screws
1	$\frac{9}{32}$	$\frac{1}{4}$	—	—	—	—
2	$\frac{11}{32}$	$\frac{5}{16}$	—	—	—	—
3	$\frac{13}{32}$	$\frac{3}{8}$	$\frac{1}{4}$	—	—	$\frac{1}{4}$
4	$\frac{15}{32}$	$\frac{7}{16}$	$\frac{5}{16}$	$\frac{1}{4}$	—	—
5	$\frac{9}{16}$	$\frac{1}{2}$	$\frac{3}{8}$	$\frac{5}{16}$ and $\frac{3}{8}$	$\frac{1}{4}$	$\frac{5}{16}$

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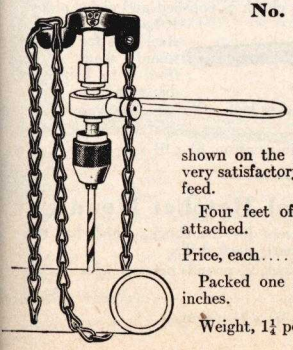
Price, per set, complete..... (YAYOS) $3.85

Packed one in a carton, $8\frac{1}{2}$ x $4\frac{3}{4}$ x $2\frac{1}{2}$ inches.
Weight, $2\frac{1}{2}$ pounds.

Chain Attachment for Ratchet Drills
No. 309



An ingenious device that can be used with ratchet drills as a clamp wherever a chain can be passed around the work. For use in connection with the No. 99 Ratchet Drill, shown on the preceding page, it makes a very satisfactory substitute for an automatic feed.

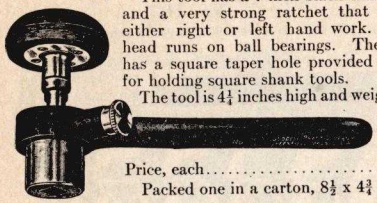
Four feet of heavy steel sash chain is attached.

Price, each..... (YIJNO) $1.30

Packed one in a carton, $5\frac{1}{4}$ x $4\frac{1}{4}$ x $1\frac{3}{4}$ inches.

Weight, $1\frac{1}{4}$ pounds.

No. 83 Universal Ratchet Handle



This tool has a 7-inch black enameled iron handle and a very strong ratchet that can be used for either right or left hand work. The hard wood head runs on ball bearings. The polished socket has a square taper hole provided with a set screw for holding square shank tools.

The tool is 4¼ inches high and weighs 1½ pounds net.

Price, each.....(YASEL) $3.30

Packed one in a carton, 8½ x 4¾ x 2½ inches.

No. 81 Universal Ratchet Handle

Same as No. 83 above, except that it has a polished hard wood handle in place of the ball bearing head. The tool is 6½ inches high and weighs 1½ pounds net.

Price, each.....(YAREK) $2.80

Packed one in a carton, 8½ x 2½ x 2¼ inches.

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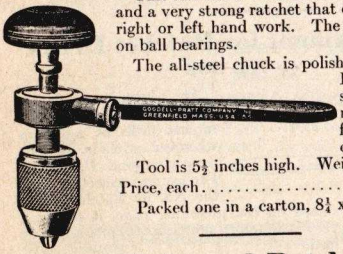
No. 85 Universal Ratchet Handle



This tool has a 7-inch black enameled iron handle and a very strong ratchet that can be used for either right or left hand work. The hard wood head runs on ball bearings.

The all-steel chuck is polished and nickel plated. It has three hardened steel jaws for holding round shank drills from 0 to ½ inch in diameter.

Tool is 5½ inches high. Weight, 2 pounds net.

Price, each.....(YASON) $4.40

Packed one in a carton, 8¼ x 6¼ x 2½ inches.

No. 84 Universal Ratchet Handle

Same as No. 85 above, except for the chuck, which has two forged steel jaws for holding square shank drills.

Tool is 6½ inches high. Weight, 2¼ pounds net.

Price, each.....(YASLE) $4.20

Packed one in a carton, 8¼ x 6¾ x 2½ inches.

Ratchet Drill

No. 86

Capacity 0 to ½ inch

This ratchet drill is provided with a screw feed for use in connection with an "old man" or clamp. The feed can be operated by turning the knurled handle or by using a lever in the steel center provided for this purpose.

A 7-inch enameled iron handle is provided and a strong and positive ratchet for either right or left hand work. The knurled feed handle and the chuck are polished and nickel plated.

The all-steel chuck has three hardened jaws for holding round shank drills 0 to ½ inch.

The tool is 7¾ inches high and weighs 2½ pounds net.

rice, each.....(YATAL) $4.80

Packed one in a carton, 8¼ x 8¼ x 2¼ inches.

Ratchet Drill

No. 87

Capacity 0 to ½ inch

Same as No. 86 above, with addition of the friction feed device illustrated, which automatically regulates the feed.

Tool is 8¾ inches high with feed device attached.

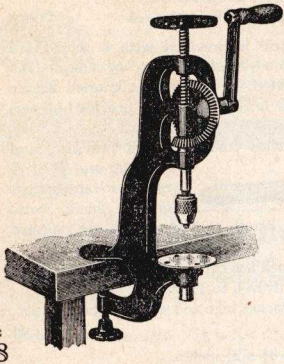
Weight, 3 pounds.

rice, each, complete.....(YATLA) $6.00

Packed one in a carton, 8¼ x 8¼ x 2¼ inches.

No. 8 Bench Drill

Capacity 0 to ¼ inch



This bench drill has a solid cast-iron frame which is designed to give the maximun strength with the lightest weight consistent. It has a hand feed that is controlled by the feed wheel on the top of the steel feed screw.

The gears of these drills are all turned and cut from solid blanks, and are fitted carefully so that they run smoothly and easily.

The table has a turned and polished top and is adjustable for height.

The iron parts of this machine are finished in red and black machine enamel. The steel parts are polished.

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The all-steel chuck has three hardened jaws for holding round shank drills of all sizes from 0 to ¼ inch.

Eight tool steel drill points, $\frac{1}{16}$ to $\frac{1}{4}$ inch, are furnished with each machine.

Height above bench, 13 inches. Net weight, 7½ pounds.

Price, each..... (WYHJE) $8.80

Packed one in a wooden case, 16½ x 10 x 6¼ inches.
Shipping weight, 12½ pounds.

No. 8½ Bench Drill

Same as No. 8 above, with the addition of a special vise which fits in the table bracket. The jaws of the vise are opened equally by a right and left hand screw. The jaws are 2 inches wide and open 1¼ inches.

Net weight, 9 pounds.

Price of drill and vise, complete..... (WYHOL) $11.55

Packed one in a wooden case, 16½ x 10 x 6¼ inches.
Shipping weight, 13½ pounds.

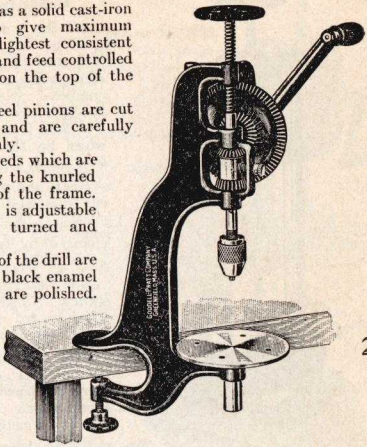
No. 8½ Bench Drill Vise

Price of separate vise, each ..... (WYHUM) $2.75

Packed one in a carton. Weight, 1½ pounds.

No. 9 Bench Drill

Capacity 0 to ⅜ inch



This bench drill has a solid cast-iron frame designed to give maximum strength with the lightest consistent weight. It has a hand feed controlled by the feed wheel on the top of the steel feed screw.

The gears and steel pinions are cut from solid blanks and are carefully fitted to run smoothly.

There are two speeds which are changed by turning the knurled knob on the side of the frame.

The table, which is adjustable for height, has a turned and polished top.

All the iron parts of the drill are finished in red and black enamel and the steel parts are polished.

The chuck is all steel, with three hardened jaws for holding round shank drills of all sizes up to ⅜ inch in diameter.

Eight drill points, 1/16 to 1/4 inch in diameter, furnished with each machine.

Height above table, 18 inches. Net weight, 13½ pounds.

Price, each..... (WYIBD) $12.70

Packed one in a wooden case, 21 x 12 x 6 inches.
Shipping weight, 19 pounds.

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No. 9½ Bench Drill

Same as No. 9 above, with the addition of a special vise which fits the table bracket. The jaws of the vise are opened equally by a right and left hand screw. The jaws are 2½ inches wide and open 2 inches.

Price of drill and vise, complete ..... (WYIJL) $16.00

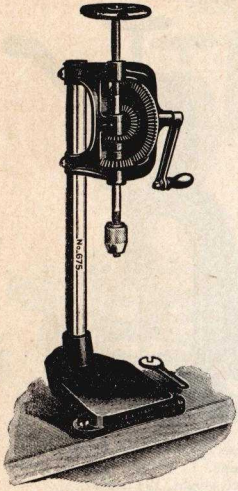
Packed one in a wooden case, 21 x 12 x 6 inches.
Shipping weight, 22 pounds.

No. 9½ Bench Drill Vise

Price of separate vise, each ..... (WYILN) $3.30

Packed one in a carton. Weight, 3½ pounds.

No. 675 Bench Drill



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Capacity 0 to ½ inch

All the working parts of this machine are clamped to a 24-inch steel tube of 1¼-inch diameter, which sets into a black enameled base that takes a bench space 8½ x 12 inches. The feed is operated by a hand wheel on the top of the steel feed screw.

Gears and pinions are machine cut from solid blanks.

There are two speeds which are changed by turning the shifter knob in the rear of the frame.

The table proper is 6 x 7 inches. All iron parts are finished in red and black enamel and all steel parts polished.

Each machine is fitted with an all-steel chuck that has three hardened jaws for holding round shank drills from 0 to ½ inch in diameter.

Height above bench, 28½ inches.

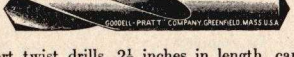
Net weight, 28 pounds.

Price, each..... (ZAJEV) $16.50

Packed one in a wooden case, 26½ x 11 x 10 inches.

Shipping weight, 38 pounds.

Special Short Twist Drills

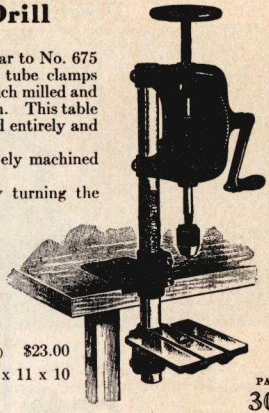


Special short twist drills, 2¼ inches in length, can be supplied in sets for use in the smaller sizes of bench drills. They add materially to the capacity between the end of the drill and the table.

		Price per Set
SET No. 080.	1 each, 1/16, 3/32, 1/8, 5/32, 3/16, 7/32, ¼ inch... (YAPOK)	$2.20
SET No. 090.	1 each, 1/16, 3/32, 1/8, 5/32, 3/16, 7/32, ¼, 9/32, 5/16, 11/32, ⅜ inch..... (YAUCY)	4.40

No. 10 Bench Drill

Capacity 0 to ½ inch



This is a two-speed machine similar to No. 675 on the preceding page. The steel tube clamps into the bench plate and the 6 x 6½ inch milled and T-slotted table is likewise clamped on. This table can be swung to one side or removed entirely and work blocked up from the floor.

The gear and pinions are accurately machined from solid blanks.

The two speeds are changed by turning the shifter knob at the back of the frame.

Iron parts are finished in red and black enamel and all steel parts polished. The all-steel chuck has three hardened steel jaws for holding round shank drills from 0 to ½ inch in diameter. Weight, 30 pounds.

Price, each..... (WYIRT) $23.00

Packed one in a wooden case, 27 x 11 x 10 inches.

Shipping weight, 40 pounds.

PAGE 301

Bench Drill

No. 10½

This machine is the same as No. 10 above, with the addition of a vise and three steel centers. The jaws of the vise are opened equally by a right and left hand screw. The jaws are 2½ inches wide and open 2 inches. The sides of the vise engage the table slots.

A point center, ⅜ inch in diameter; a cup center, 1 inch in diameter; and a V center, 1 inch in diameter, fitting the hole in the center of the table, are also furnished.

Weight of machine, vise, and centers, 33½ pounds net.

Price, each, complete..... (WYIKE) $28.25

Packed one in a wooden case, 27 x 11 x 10 inches.

Shipping weight, 43½ pounds.

No. 10½ Bench Drill Vise and Centers

Price of separate vise, each..... (WYJMO) $3.75

Price of centers, per set of three..... (WYJTA) 1.50

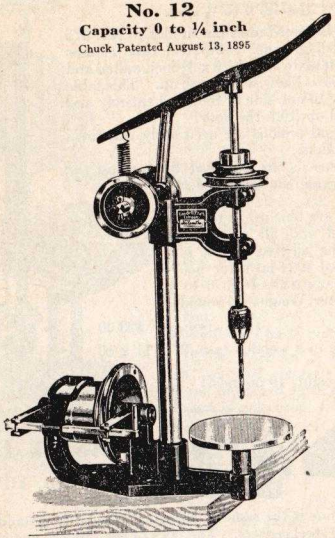
Net weights: Vise, 3 pounds. Centers, ½ pound.

Power Bench Drill

No. 12

Capacity 0 to ¼ inch

Chuck Patented August 13, 1895



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302

This machine is a sensitive bench drill for light work. It is of good quality but it is sold for a very low price. The head is enameled iron attached to a polished steel shank.

Each machine is fitted with a three-jawed steel chuck for holding round shank drills of all sizes up to ¼ inch in diameter.

The machine drills to the center of a 6¼-inch circle. The spindle can be set for any movement 3½ inches or less. The table is 4⅞ inches in diameter and has a 2¼-inch adjustment. Extreme distance from chuck to table is 8 inches.

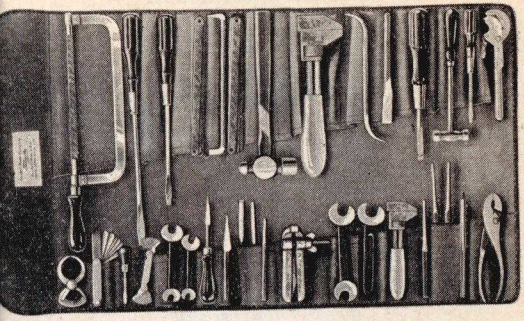
The loose pulley is 3 inches in diameter with a 1-inch face. The steps are 3½ and 4½ inches made for ¼-inch round belt. No belt is furnished.

Total height, 24 inches. Net weight, 20 pounds.

Price, each ..... (WYKNO) $24.00

Packed one in a wooden case, 20 x 17 x 8 inches.
Shipping weight, 32 pounds.

No. 1111 General Repair Kit



This set consists of 33 high-grade tools especially selected for general field or road repairs on automobiles, trucks, tractors, gas engines, etc.

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The tools are all contained in pockets in the extra heavy leather-bound canvas case from which they can be instantly removed or replaced. Net weight, $11\frac{5}{8}$ pounds.

The following tools are included:

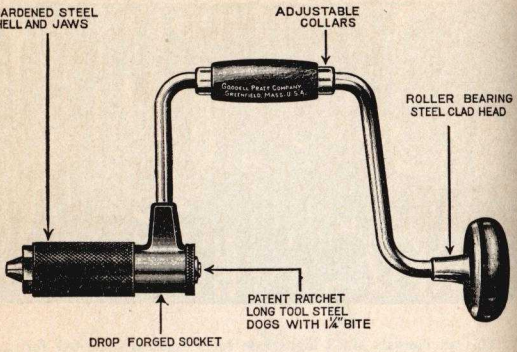
1—Hack Saw Frame, 8-inch
1—Brass Hammer, 8-ounce
1—Hand Vise
1—Screw Pitch Gauge
1—Pocket Screw-Driver
1—Hand Rimmer
1—Screw-Driver, 3-inch
1—Screw-Driver, 6-inch
1—Screw-Driver, 8-inch
1—Thickness Gauge
1—Heavy Screw-Driver, 3-inch
1—Combination Plier, $6\frac{1}{2}$-inch
1—Pin Punch, $\frac{1}{2}$-inch
1—Pin Punch, $\frac{9}{16}$-inch
1—Pin Punch, $\frac{5}{8}$-inch
1—Pin Punch, $\frac{3}{4}$-inch
1—Cold Chisel, $\frac{3}{4}$-inch
1—Cold Chisel, $\frac{5}{8}$-inch
1—Cape Chisel, $\frac{1}{4}$-inch
1—Round Cup Punch
1—Center Punch
1—Double End Wrench, $\frac{7}{16}$ and $\frac{13}{32}$ inch
1—Double End Wrench, $\frac{3}{8}$ and $\frac{1}{2}$ inch
1—Double End Wrench, $\frac{9}{16}$ and $\frac{11}{16}$ inch
1—Cotter Pin Puller
1—Adjustable Wrench, 6-inch
1—Adjustable Wrench, 10-inch
1—Single End Wrench, $\frac{7}{8}$-inch
1—Machinists' Hammer, 12-ounce
1—Offset Screw-Driver, 8-inch
1—Universal Wrench
1—Indicating Caliper, 2-inch
12—Flexible H. S. Blades, 8-inch

List price..... (ZISIR) **$27.50**

Packed one in a carton, $17\frac{1}{2}$ x 5 x 4 inches.
Weight, $12\frac{1}{4}$ pounds.

Ratchet Bit Braces

Patented September 16, 1924; July 27, 1926


HARDENED STEEL SHELL AND JAWS
ADJUSTABLE COLLARS
GOODELL PRATT COMPANY GREENFIELD, MASS. U.S.A.
ROLLER BEARING STEEL CLAD HEAD
PATENT RATCHET LONG TOOL STEEL DOGS WITH 1/4" BITE
DROP FORGED SOCKET

PAGE 304

This heavy duty brace is equipped with a new universal chuck and a very powerful ratchet mechanism capable of meeting the severest requirements.

The chuck is universal, holding round, square, or taper shanks. Its capacity is greater than usual and it will hold the largest sizes of bit brace shanks. The chuck shell, which is turned from a solid steel bar, has a $\frac{11}{16}$-inch hole for inserting bits, is carefully hardened, and has a nice black oil finish. The end of the shell is a hexagon so it can be tightened with a wrench or in a vise if desired. The chuck jaws are carefully hardened steel.

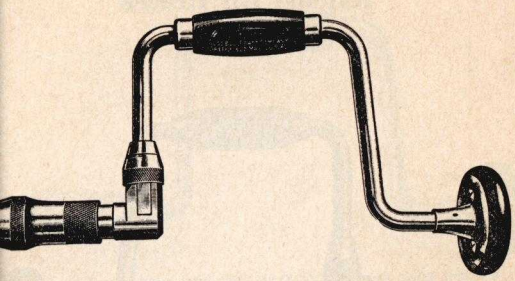
The ratchet mechanism is very strong. The teeth are broached the entire length of the drop-forged steel socket. The hardened tool steel dogs are set directly in the chuck shank and engage the ratchet teeth $1\frac{1}{4}$ inches, giving tremendous strength. The ratchet is shifted by turning the nickel plated knurled dial on the end of the chuck shank.

The head is steel clad, and runs on dust-proof roller bearings. The handle runs between nickel plated adjustable collars. The head and handle are made of a handsomely grained tropical wood. The heavy steel sweep has smooth, even bends and is nicely polished and nickel plated.

	Sweep	Weight		Price, Each
No. 2508	8 inches	3 pounds	(ZOFOL)	$6.00
No. 2510	10 inches	$3\frac{1}{4}$ pounds	(ZOFOM)	6.20
No. 2512	12 inches	$3\frac{1}{2}$ pounds	(ZOFOT)	6.40

Packed two in a carton.

Ratchet Bit Braces



These substantial, well-built braces have a powerful, durable, ratchet action controlled by the large shifter ring. The chuck shell and socket are made of steel and are of ample strength for the severest work. The chuck jaws are forged and carefully heat treated. They hold all ordinary size bit-brace shanks.

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The sweep is heavy steel with smooth, even bends. The handle is hard wood and runs between adjustable steel collars. The head is steel clad and runs on roller bearings contained in a dust-proof compartment. It is made of hard wood and nicely finished in mahogany enamel.

All exposed steel parts are well-polished, nickel plated, and buffed, giving the brace a fine appearance.

		Weight		Price, Each
No. 7006	6-inch sweep	$2\frac{1}{2}$ pounds	(ZORZA)	$3.50
No. 7008	8-inch sweep	$2\frac{5}{8}$ pounds	(ZORZY)	3.60
No. 7010	10-inch sweep	$2\frac{3}{4}$ pounds	(ZOSAT)	3.70
No. 7012	12-inch sweep	$2\frac{7}{8}$ pounds	(ZOSEV)	3.80
No. 7014	14-inch sweep	3 pounds	(ZOSOY)	4.00

Packed two in a carton.

Ratchet Bit Braces

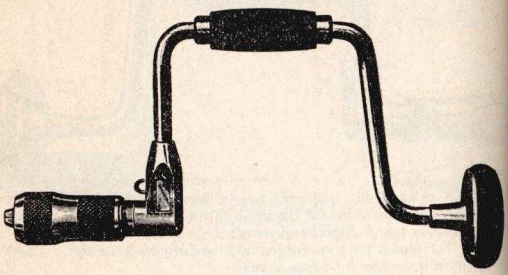
These braces are similar to the above, but with natural steel finish. The head, which is steel clad with roller bearings, and the handle, which runs between adjustable collars, are finished in black. Alligator-type jaws are supplied.

No. 8010.	10-inch sweep	(ZUGAM)	$2.30
No. 8012.	12-inch sweep	(ZUGAR)	2.50

Packed one half dozen in a carton.

Ratchet Bit Braces

Patented December 27, 1892



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These braces have steel-clad heads that run on roller bearings, which are contained in a dust-proof compartment. The handles run in adjustable collars. Heads and handles are made of handsomely grained tropical wood.

The sweeps are steel, with smooth and even bends. The ratchets are strong and easily operated by a small lever.

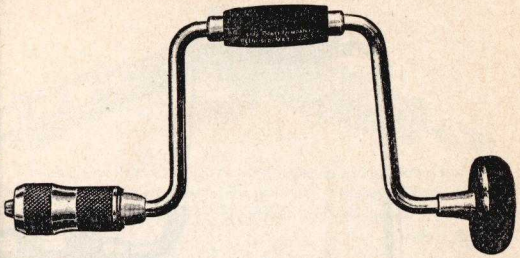
The chuck sockets and shells are malleable iron; jaws are forged steel. Chucks hold all sizes of square shank bits.

All exposed steel parts are polished and heavily nickel plated.

	Sweep	Weight		Price, Each
No. 410	10-inch	$2\frac{5}{8}$ pounds	(YOHRO)	$4.00
No. 412	12-inch	$2\frac{3}{4}$ pounds	(YOHUS)	4.20

Packed two in a carton.

Plain Braces



These braces have steel-clad heads that run on roller bearings, which are contained in a dust-proof compartment. The handles run in adjustable collars. Heads and handles are hard wood, with a mahogany enamel finish.

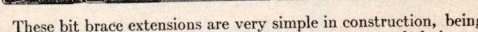
The sweep is steel, with smooth and even bends. Chuck socket and shell are malleable iron; jaws are forged steel. Chuck holds all sizes of square shank bits. PAGE 307

All exposed steel parts are polished and heavily nickel plated.

	Sweep	Weight		Price, Each
No. 210	10-inch	2¼ pounds	(YEPAL)	$2.30

Packed two in a carton.

Bit Brace Extensions



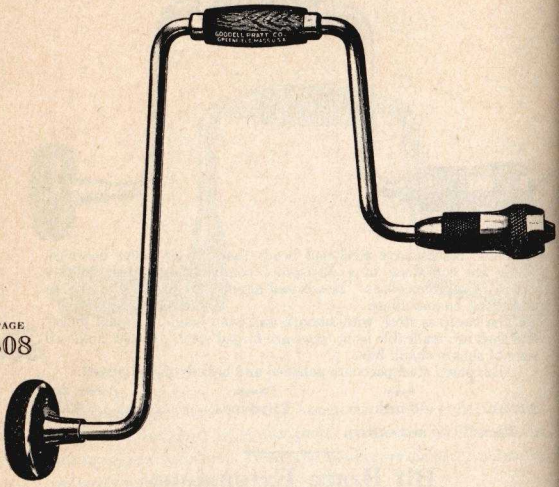
These bit brace extensions are very simple in construction, being made of only two pieces. The shank has a square taper hole in one end and the sleeve has a milled opening through which the bit shank can be inserted. The sleeve runs on a fine thread, insuring a strong and positive grip. They are made entirely of steel, nicely polished, and knurled, as shown in the illustration.

Made in two sizes, one to follow ⅝-inch bits, and the other to follow ¾-inch bits.

		Price, Each
To follow ⅝-inch bits:		
No. 450	12 inch (YONVE)	$1.40
No. 451	15 inch (YONYO)	1.50
No. 452	18 inch (YOOHR)	1.60
No. 453	21 inch (YOOJS)	1.70
No. 454.	24 inch (YOOKT)	$1.80
To follow ¾-inch bits:		
No. 530	18 inch (YUDIR)	2.00
No. 531	24 inch (YUDPA)	2.20

Packed one in a carton.

Wimble Braces



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Designed for use of ship carpenters and car builders or wherever holes have to be bored in heavy timbers or hard wood.

The double sweep gives a double leverage that materially lightens the work.

They are well built along the lines of our other braces.

The sweeps are steel with smooth even bends. The head is steel clad and runs on roller bearings. The handle rotates freely between adjustable collars. The chuck is heavy for the work and is equipped with forged steel jaws.

All exposed steel parts are nicely polished and nickel plated.

	Sweep	Weight		Price, Each
No. 260	10 inches	$2\frac{1}{2}$ pounds	(YIBOG)	$4.20
No. 262	12 inches	$2\frac{3}{4}$ pounds	(YICAD)	4.80

Packed two in a carton.

Angular Brace
No. 345

This angular brace can be securely fastened at any desired angle. The setting mechanism absolutely prevents slipping. Chuck holds all sizes of square shank bits. Length over all, 13 inches.

Price, each..... (YISVE)) $3.30

Packed one in a carton, $13\frac{1}{4}$ x $2\frac{3}{4}$ x 2 inches.
Weight, $2\frac{1}{2}$ pounds.

Universal Corner Brace
No. 215

Patented May 9, 1905

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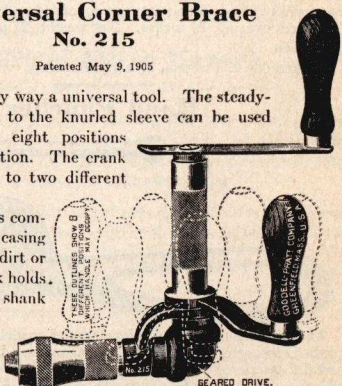
This tool is in every way a universal tool. The steadying handle attached to the knurled sleeve can be used in any one of the eight positions shown in the illustration. The crank handle is adjustable to two different lengths.

The geared drive is completely inclosed in a casing that protects it from dirt or breakage. The chuck holds all sizes of square shank bits.

All exposed steel parts are polished and nickel plated; iron parts are finished in red and black enamel.



GEARED DRIVE.

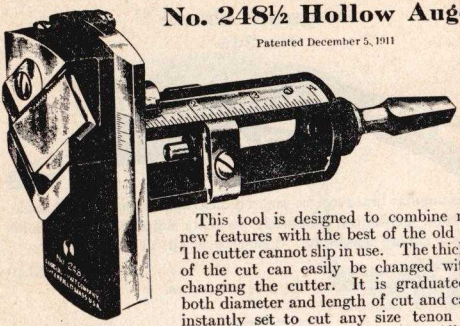
Distance from gearing to end of chuck is 6 inches. Net weight, 3 pounds.

Price, each..... (YEPYR) $5.50

Packed one in a carton, $7\frac{1}{4}$ x $7\frac{1}{4}$ x $1\frac{3}{4}$ inches.
Weight, $3\frac{1}{4}$ pounds.

No. 248½ Hollow Auger

Patented December 5, 1911



This tool is designed to combine many new features with the best of the old ones. The cutter cannot slip in use. The thickness of the cut can easily be changed without changing the cutter. It is graduated for both diameter and length of cut and can be instantly set to cut any size tenon from ¼ inch to 1¼ inches in diameter and up to 4 inches in length. All parts are carefully fitted; iron parts are enameled and steel parts polished.

Length over all, 7¼ inches. Net weight, 2⅛ pounds.

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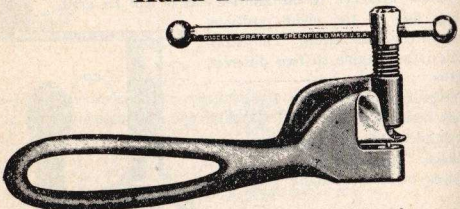
Price, each..... (YEZZO) $6.60

Packed one in a carton, 7¾ x 4¾ x 3 inches. Weight, 2½ pounds.

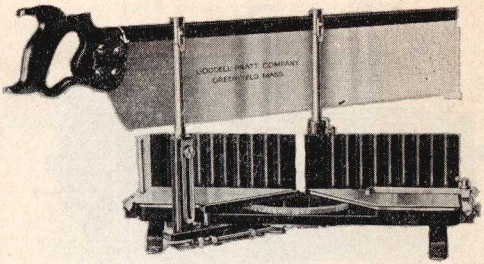
Hand Punches



These hand punches have nickel plated, malleable iron frames, and polished steel screws, crossbars, and strippers. Punches and dies are carefully tempered tool steel. The stripper is so arranged that no work too large for the punch can be inserted. These punches are 5¾ inches long over all, and weigh 7 ounces each net.

No. 284.	Size 1/16 inch.....	(YIEMP)	$1.30
No. 285.	Size 3/32 inch.....	(YIERT)	1.30
No. 286.	Size ⅛ inch.....	(YIEVY)	1.30
No. 287.	Size 5/32 inch.....	(YIEWZ)	1.30

Packed one in a carton, 6¼ x 2¾ x ⅞ inch. Weight, 8 ounces.



All-Steel Mitre Boxes

Patented February 9, 1904; December 2, 1924; Others Pending

Because every single part of the Goodell Mitre Box is made entirely of steel, there is absolutely no breakage, and consequently no expense for repairs. The total repairs and replacements since their introduction have amounted to almost nothing.

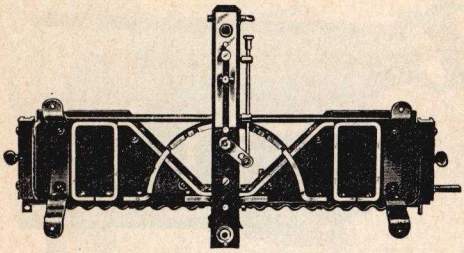
This wonderful durability is due not only to the fact that every piece is steel, but also to the design and workmanship. You will notice from the illustration that the frame is built in the form of a bridge truss, making it absolutely rigid. The different portions of the truss frame are strongly welded together. The very careful workmanship insures absolute accuracy not only when the box is new, but after years of daily use.

When this mitre box was first put on the market, it was said that although it would not break, it could be bent. Years of use have proved, however, that strains and blows that would break an iron box leave this one entirely unharmed.

Durability is one reason why you will prefer the Goodell Mitre Box, accuracy of both the angular and vertical cuts is another and there are many more.

All-Steel Mitre Boxes

Patented February 9, 1904; December 2, 1924



There are two separate scales on the quadrant. One is graduated in degrees, and the other, a new patented framing scale, will give the proper angle at which finish and trim for roofs, staircases, etc., should be cut for any given rise per foot. For instance, if the pitch of a roof is 8 inches to the foot, simply set the brass indicator on the saw carriage at 8 on the framing scale and the saw is at the correct angle at which the trim should be cut, without any figuring or laying out whatsoever.

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The saw when elevated is held in place by a spring lock, which is easily released by a slight downward pressure.

The saw carriage can be swung from 45 to 90 degrees either right or left. It locks automatically at all the most desired angles. At all other angles, it can be locked by pulling forward a small knob on the side of the saw carriage.

Angles more acute than 45 degrees are obtained by an extra angle attachment fastened to the left side of the box. This attachment can also be used as a molding holder. A length gauge is fastened to the right side of the box. This can be quickly set in position for cutting duplicate pieces of any length up to 20 inches. Both of these attachments can be removed or replaced by means of four screws.

The steel bottom plates are scored to keep the work from slipping.

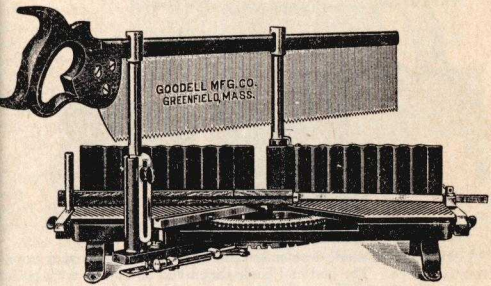
Saw guides are extra long, giving great rigidity and absolute accuracy when the saw is raised.

The stops can be readily regulated to saw to any desired depth.

All-Steel Mitre Boxes

With and without Saws

Patented February 9, 1904; December 2, 1924; Others Pending



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These mitre boxes are furnished with high-grade back saws made specially for us and can be guaranteed only when supplied with saws fitted to the boxes by ourselves. They are, however, furnished without them if desired.

All sizes have a capacity of 10½ inches at right angles and 7¼ inches at mitre.

For full particulars, see pages 311 and 312.

Prices with Saws

	Size Saw	Weight Net	Pounds Gross		
No. 1244	24 x 4 inches	20	30	(ZITRE)	$24.50
No. 1264	26 x 4 inches	21	31	(ZITUV)	25.50
No. 1285	28 x 5 inches	24	35	(ZITWY)	27.50
No. 1305	30 x 5 inches	25	37	(ZIUGH)	28.60
No. 1306	30 x 6 inches	26	38	(ZIUHJ)	33.00

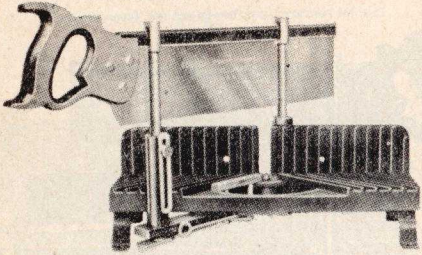
Prices without Saws

		Net	Gross		
No. 1002	For 4-inch Saw	18½	26	(ZIRNA)	$20.00
No. 1003	For 5-inch Saw	20	27½	(ZIROK)	22.00
No. 1004	For 6-inch Saw	21½	32	(ZIRPE)	26.50

Each box packed in a wooden case.

"Take Down" Mitre Box

With Iron Frame and Steel Guides



A sturdy, well-made iron mitre box with steel guides at a very attractive price. The bed and back are cast in one piece, with both faces machined at right angles to one another. Four screws hold the feet in position.

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The saw carriage is very rigid and swings easily and freely from 45 to 90 degrees left or right. It locks automatically at the most used angles. A compression lock controlled by the pull rod at the side of the carriage locks it at all intermediate angles.

By removing the king pin the saw carriage can be removed and fastened to the back of the box, making the box very compact and easy to carry.

The high-grade saw furnished runs in long steel saw guides. Two spring locks in the guideposts hold the saw in place when elevated. A slight downward pressure releases them.

Depth gauges are provided and can be used to regulate the cut.

Capacity at right angles, $7\frac{5}{8}$ inches; at mitre, $5\frac{3}{4}$ inches. Length of bed, 18 inches.

No. 1100, without saw. Price, each..... (ZUHEP) $12.00

Packed one in a wood case, 25 x 11 x 6 inches.
Weight, $16\frac{3}{4}$ pounds. Shipping weight, 23 pounds.

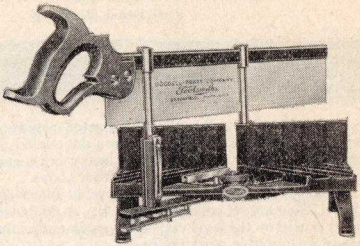
No. 1118, with 18 x 4 inch saw. Price, each ..... (ZUHNA) $16.00

Packed one in a wood case, 25 x 11 x 6 inches.
Weight, 19 pounds. Shipping weight, 25 pounds.

No. 1124, with 24 x 4 inch saw. Price, each..... (ZUHOR) $17.00

Packed one in a wood case, 31 x 11 x 6 inches.
Weight, 20 pounds. Shipping weight, $28\frac{1}{2}$ pounds.

No. 1625 Mitre Box



A light, easily portable box of excellent design. The iron bed and back are one piece, with both faces machined at right angles to one another. The legs are demountable.

The saw carriage is steel throughout, has a very substantial pivot pin on which it swings freely from 45 to 90 degrees right or left. It locks automatically at the most used angles right and left.

The high-grade saw furnished has a blade 2½ inches deep and 16 inches long and runs in long steel guides, assuring accuracy of the vertical cut as well as the angular.

Gauges are provided to regulate the depth of the cut.

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The steel guides, depth gauges, and gib are white nickeled. The bed, back, and legs are finished in red and black enamel.

Capacity at right angles, 5⅛ inches; at mitre, 3½ inches.

Length of bed, 12 inches. Net weight, 7¼ pounds.

No. 1625, with 16 x 2½ inch saw..... ... ...(ZUJPA) $12.00

Packed one in a wood case, 22 x 8 x 6 inches.
Shipping weight, 11 pounds.

Aluminum Levels

The frames of these levels are cast from a very light, strong aluminum alloy. The cross section is similar to an I beam, giving maximum rigidity with minimum weight. Both the top and bottom faces are accurately ground and the edges nicely finished. Both the level and plumb vials are carefully selected and tested. Vials are all set solidly in the frame.

	Length	Weight		Price, Each
No. 913	12 inches	18 ounces	(ZICYA)	$4.00
No. 918	18 inches	23 ounces	(ZIDEB)	5.00
No. 924	24 inches	29 ounces	(ZIDZA)	5.80

Packed one in a carton.

Narrow Rosewood Level

Full Brass Binding

Made from a solid stick of selected rosewood, thoroughly seasoned. The brass binding rods are dovetailed into the wood their entire length and doweled to the heavy brass end plates. A heavy brass plate protects the level vial from above.

The vials used are *accurately ground internally* and very sensitive. They are set solid in the stock. A double movable bar adjustment is used on the level vial, and a similar adjustment on the plumbs. Made with double plumb only.

These levels have an exceptionally fine finish.

	Size, Inches	Approximate Weight		Price, Each
No. 4424	24 x 2 x 1	2¼ pounds	(ZOIPS)	$7.85

Each level packed in an individual carton.

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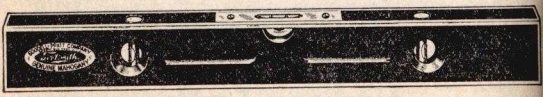
Mahogany Levels

Full Brass Binding



These levels are made from a solid stick of selected mahogany, thoroughly seasoned. The brass binding rods are dovetailed into the wood their entire length, and doweled to the heavy brass end plates. The level vial is protected from above by a heavy brass plate. Double hand grips on both sides assure safe handling.

The vials are drawn to a true curve and are thoroughly tested. They are accurate and sensitive. Vials are set solid in the stock. A double movable bar adjustment is used on the level, and a similar adjustment on the plumbs. Made with double plumb only. Highly finished in natural mahogany.

	Size, Inches	Approximate Weight		Price, Each
No. 4324	24 x 2½ x 1 3/16	2½ pounds	(ZOHJA)	$6.00
No. 4326	26 x 2½ x 1 3/16	2¾ pounds	(ZOHKE)	6.30
No. 4328	28 x 2½ x 1 3/16	3 pounds	(ZOHMO)	6.60
No. 4330	30 x 2½ x 1 3/16	3¼ pounds	(ZOHPY)	6.90

Each level packed in an individual carton.

Narrow Mahogany Levels

Full Brass Binding

These levels are made from a solid stick of selected mahogany, thoroughly seasoned. The brass binding rods are dovetailed into the wood their entire length, and doweled to the heavy brass end plates.

The vials used are drawn to a true curve and are very carefully tested. Every vial used is sensitive and accurate. They are all set solid, as a double movable bar adjustment is used. The plumb glass has a similar adjustment. Highly finished in natural mahogany.

SINGLE PLUMB

	Size, Inches	Approximate Weight		Price, Each
No. 1524	24 x 2 x 1	$1\frac{7}{8}$ pounds	(ZOBDE)	$4.40

DOUBLE PLUMB

No. 4524	24 x 2 x 1	2 pounds	(ZOKEM)	$5.30

Each level packed in an individual carton.

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Carpenters' Levels

Heavy Brass End Plates

These levels are made from a solid stick of thoroughly seasoned hard wood, with the ends protected by heavy brass end plates. They are stained to imitate mahogany and nicely finished. Double bull and grips provided for safe handling.

The vials are drawn to a true curve and are carefully tested. Each one is sensitive and accurate. They are set solid in the stock, as a double movable bar adjustment is used. The plumb has a similar adjustment. Made with double plumb only.

	Size, Inches	Approximate Weight		Price, Each
No. 4824	24 x $2\frac{1}{2}$ x $1\frac{3}{16}$	2 pounds	(ZOMEP)	$3.50
No. 4826	26 x $2\frac{1}{2}$ x $1\frac{3}{16}$	$2\frac{1}{8}$ pounds	(ZOMNA)	3.70
No. 4828	28 x $2\frac{1}{2}$ x $1\frac{3}{16}$	$2\frac{1}{4}$ pounds	(ZOMOR)	3.90
No. 4830	30 x $2\frac{1}{2}$ x $1\frac{3}{16}$	$2\frac{3}{8}$ pounds	(ZOMPE)	4.10

Each level packed in an individual carton.

Carpenters' Levels

These levels are made from a solid stick of thoroughly seasoned hard wood. They are stained to imitate mahogany and nicely finished.

The vials are drawn to a true curve and are carefully tested. Each one is sensitive and accurate. They are set solid in the stock, as a double, movable bar adjustment is used. The plumb has a similar adjustment.

	Size, Inches	Weight		Price, Each
Single Plumb				
No. 2012	12 x $2\frac{1}{8}$ x $1\frac{1}{8}$	$\frac{7}{8}$ pound	(ZOEBD)	$1.70
No. 2018	18 x $2\frac{3}{8}$ x $1\frac{3}{16}$	$1\frac{3}{8}$ pounds	(ZOELN)	2.00
No. 2024	24 x $2\frac{3}{8}$ x $1\frac{3}{16}$	$1\frac{7}{8}$ pounds	(ZOEVY)	2.40
Double Plumb				
No. 5024	24 x $2\frac{3}{8}$ x $1\frac{3}{16}$	$1\frac{3}{4}$ pounds	(ZOOCH)	$3.00
No. 5030	30 x $2\frac{1}{2}$ x $1\frac{3}{16}$	$2\frac{3}{8}$ pounds	(ZOONS)	3.50

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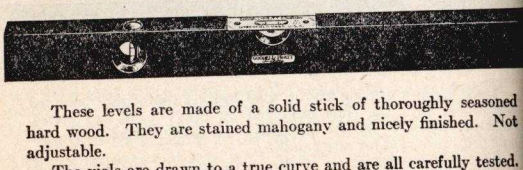
Carpenters' Levels



These levels are made of a solid stick of thoroughly seasoned hard wood. They are stained mahogany and nicely finished. Not adjustable.

The vials are drawn to a true curve and are all carefully tested. Made with single plumb only.

The wood in this level has been specially treated in hot oil giving a durable finish and making it highly resistant to moisture.

	Size, Inches	Approximate Weight		Price, Each
No. 2712	12 x $2\frac{3}{16}$ x $1\frac{1}{4}$	$\frac{3}{4}$ pound	(ZOFUG)	$1.20
No. 2718	18 x $2\frac{3}{8}$ x $1\frac{1}{4}$	$1\frac{1}{4}$ pounds	(ZOFYP)	1.35
No. 2724	24 x $2\frac{3}{8}$ x $1\frac{1}{4}$	$1\frac{5}{8}$ pounds	(ZOFZT)	1.80

Packed one dozen in a wooden case.

Torpedo Level

No. 2409

This very handy little level is made of thoroughly seasoned, straight-grained wood, which is given an oil finish that effectively resists moisture.

The vials are drawn to a true arc and are solidly and accurately set in the level. The level vial is protected with a substantial brass plate.

Made with single plumb only.

The overall length is $9\frac{7}{8}$ inches; depth, $1\frac{1}{2}$ inches, and width, $\frac{5}{8}$ inch. Net weight, 3 ounces.

Price, each..... (ZOFLA) $1.10

Packed one half dozen in a carton, $9\frac{1}{4}$ x $4\frac{1}{4}$ x $1\frac{5}{8}$ inches. Weight, $1\frac{1}{2}$ pounds.

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Masons' Levels

These levels are made of a solid stick of thoroughly seasoned selected pine, well finished. This makes a level that is light and easy to handle.

The vials are drawn to a true curve and are carefully tested. Vials are set solid in the stock, as a double, movable bar adjustment is used. The two plumb glasses have a similar adjustment.

Made with double plumb only.

	Size, Inches	Approximate Weight		Price, Each
No. 5636	36 x $2\frac{3}{8}$ x $1\frac{1}{4}$	$1\frac{7}{8}$ pounds	(ZORAS)	$3.50
No. 5642	42 x $2\frac{3}{8}$ x $1\frac{1}{4}$	$2\frac{1}{8}$ pounds	(ZORET)	3.85
No. 5648	48 x $2\frac{3}{8}$ x $1\frac{1}{4}$	$2\frac{1}{4}$ pounds	(ZORIV)	4.30

Six Glass Levels

Patented March 25, 1930

Full Aluminum Binding

A light-weight level fitted with twin vials both in the level and the two plumbs.

Made from a solid stick of air-dried, straight-grained wood selected for lightness, strength, and particularly for freedom from warping. All four edges are bound their entire length with aluminum rods dovetailed into the wood and doweled to the heavy aluminum end plates.

The vials are drawn to a true arc of a circle and are carefully tested. Each one is sensitive and accurate. They are set solid in the stock and a double bead adjustment is provided for each glass.

The vials are protected by glass on both sides held in place by metal plates.

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Protecting glasses can be easily cleaned when fogged inside by removal of the two screws holding side plates.

Knurled hand grips are provided.

Finished in a very pleasing mahogany oil and lacquer finish that effectively keeps out moisture.

	Size. Inches		Price. Each
No. 6024	24 x $2\frac{1}{2}$ x $1\frac{3}{16}$	(ZUHRO)	$6.60
No. 6026	26 x $2\frac{1}{2}$ x $1\frac{3}{16}$	(ZUHTY)	7.00
No. 6028	28 x $2\frac{1}{2}$ x $1\frac{3}{16}$	(ZUHUS)	7.40
No. 6030	30 x $2\frac{1}{2}$ x $1\frac{3}{16}$	(ZUHYT)	7.80

Each level packed in an individual carton.

Six Glass Levels

Patented March 25, 1930

These levels are similar to the 6000 series illustrated and described above.

Made from a solid stick of selected wood but without the aluminum binding or end plates. They have a good mahogany oil finish.

	Size. Inches		Price. Each
No. 6124	24 x $2\frac{1}{2}$ x $1\frac{3}{16}$	(ZUIPY)	$4.50
No. 6126	26 x $2\frac{1}{2}$ x $1\frac{3}{16}$	(ZUIRB)	4.70
No. 6128	28 x $2\frac{1}{2}$ x $1\frac{3}{16}$	(ZUJAP)	4.90
No. 6130	30 x $2\frac{1}{2}$ x $1\frac{3}{16}$	(ZUJIR)	5.10

Each level packed in an individual carton.

No. 890 Nail Set

The $\frac{3}{8}$-inch square head on this set prevents it from rolling and at the same time gives a larger striking surface. The center is $\frac{5}{16}$ inch in diameter and is nicely knurled. Points are well cupped and the whole tool carefully tempered. Furnished with $\frac{1}{32}$, $\frac{2}{32}$, $\frac{3}{32}$, and $\frac{4}{32}$, or assorted size points. Length, 4 inches. Blued finish.

Price, per dozen. . . (ZEYIR) $2.20

No. 347 Forged Nail Set

Made from a fine piece of knurled and cornered square steel, hammer forged and very carefully tempered. Well cupped points. Points, corners and heads nicely polished. Supplied with $\frac{1}{32}$, $\frac{2}{32}$, $\frac{3}{32}$, $\frac{4}{32}$, and $\frac{5}{32}$ inch or assorted points. Three smallest sizes made of $\frac{1}{4}$-inch stock; two largest sizes of $\frac{9}{32}$-inch stock.

Length, 4 inches. Blued finish.

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Price, per dozen. . . . . (YITAV) $2.20

No. 990 Nail Set

Made of high grade tool steel $\frac{5}{16}$ inch in diameter with a knurled center and carefully tempered their entire length. Well cupped points. Heads and points nicely polished. Furnished with $\frac{1}{32}$, $\frac{2}{32}$, $\frac{3}{32}$, $\frac{4}{32}$ inch, or assorted points. Length, 4 inches. Blued finish.

Price, per dozen. . . . . (ZIMIL) $1.90

No. 999 Nail Set

Similar in every way to No. 990 but made of $\frac{3}{8}$-inch round stock and furnished in $\frac{2}{32}$, $\frac{3}{32}$, $\frac{4}{32}$, $\frac{5}{32}$ inch, or assorted sizes.

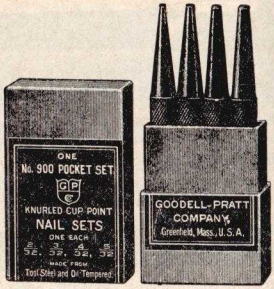
Length, 4 inches. Blued finish.

Price, per dozen. . . . . (ZIPYR) $2.00

All the above tools packed one dozen in a carton.

Pocket Sets of Nail Sets

The sets listed below consist of one of each size of the four styles of nail sets shown on the preceding page. Each set is packed in a cardboard box, making it easy to keep the set together where it can be quickly located.



			Price per Set
No. 897.	Set of 5 sizes of No. 347 Sets	(ZEYVY)	$1.00
No. 898.	Set of 4 sizes of No. 890 Sets	(ZEZER)	.85
No. 899.	Set of 4 sizes of No. 990 Sets	(ZEZRE)	.80
No. 900.	Set of 4 sizes of No. 999 Sets	(ZEZTO)	.80

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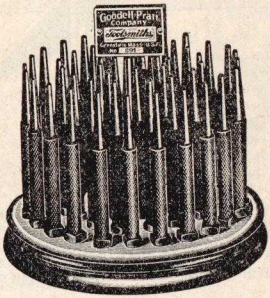
Pocket Sets of Nail Sets

The very convenient sets listed below are made up of the Nos. 999, 990, 890 and 347 Nail Sets described on a preceding page. They are put up in substantial leather cases that fit them snugly, making it easy to carry them in the pocket.

			Price per Set
No. 901.	Set of 4 sizes of No. 999 Sets	(ZEVUV)	$0.90
No. 904.	Set of 4 sizes of No. 990 Sets	(ZIADZ)	.90
No. 905.	Set of 4 sizes of No. 890 Sets	(ZIAHD)	.95
No. 907.	Set of 5 sizes of No. 347 Sets	(ZIANK)	1.10

Nail Set Displays



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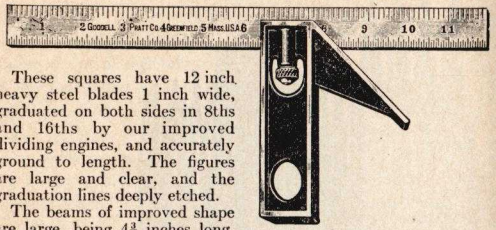
These attractive counter display stands have proven highly efficient merchandisers of nail sets. They are made of seasoned hard wood, nicely finished in glossy red and black enamel. They hold three dozen of any one of the styles shown on page 321. A standard assortment of sizes will be supplied unless otherwise specified.

No. 891.	Complete with 3 dozen No. 890 Nail Sets.. (ZEYLJ)	$7.10
No. 892.	Complete with 3 dozen No. 347 Nail Sets.. (ZEYMK)	7.10
No. 893.	Complete with 3 dozen No. 990 Nail Sets.. (ZEYOS)	6.20
No. 894.	Complete with 3 dozen No. 999 Nail Sets.. (ZEYPA)	6.50

Packed one set in a carton.

Carpenters' Combination Squares



These squares have 12 inch heavy steel blades 1 inch wide, graduated on both sides in 8ths and 16ths by our improved dividing engines, and accurately ground to length. The figures are large and clear, and the graduation lines deeply etched.

The beams of improved shape are large, being $4\frac{3}{4}$ inches long, and are made of either cast iron or aluminum. The aluminum beam makes a very light weight tool. The bearing faces of the beams are machined, and the remaining portions finished in red enamel.

As there are no levels or scribers included with these tools we are enabled to sell them at a very moderate price while maintaining the desired accuracy.

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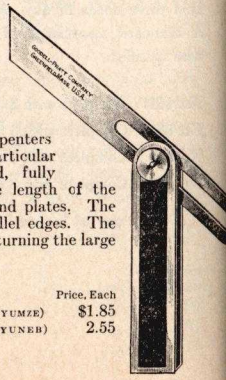
		Weight		Price, Each
No. 707	With Iron Beam	15 ounces	(ZAPEC)	$1.20
No. 807	With Aluminum Beam	7 ounces	(ZEIFY)	1.30

Each square packed in a carton, $12\frac{1}{2}$ x 4 x 1 inch.

Carpenters' Bevels

Brass Bound Beams

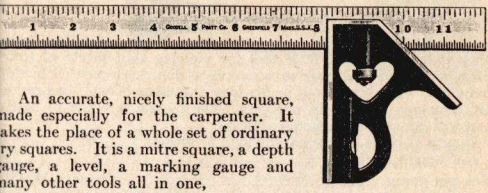


These handsome and accurate carpenters bevels will be appreciated by all particular mechanics. The handles are rosewood, fully brass bound rods dovetailed the entire length of the handle, and dovetailed to heavy brass end plates. The polished steel blades have accurate parallel edges. The blades can be fastened in any position by turning the large polished thumb screw.

	Length of Blade	Length of Beam		Price, Each
No. 578	8 inches	$5\frac{1}{2}$ inches	(YUMZE)	$1.85
No. 582	12 inches	$8\frac{1}{2}$ inches	(YUNEB)	2.55

Each bevel packed in a carton.

No. 35 Carpenters' Combination Square



An accurate, nicely finished square, made especially for the carpenter. It takes the place of a whole set of ordinary try squares. It is a mitre square, a depth gauge, a level, a marking gauge and many other tools all in one,

The well-finished steel blades are 12 inches long and 1 inch wide and are accurately graduated on both sides in 8ths and 16ths of an inch. The graduations are sharply *etched* and the figures are large and clear.

The beam has accurately milled working faces, the edges are polished, and the web is finished in black enamel. A spirit glass is accurately set in the body which can be used as a level or plumb. The beam can be slipped along the scale and locked at any point by means of the lock nut provided.

Made with 12-inch blade only. Weight, $\frac{3}{4}$ pound.

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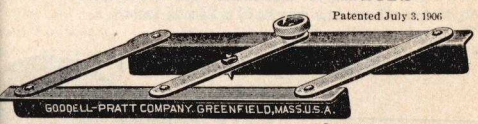
Price, each..... (YACZO) $1.80

Packed assembled in a carton, $12\frac{1}{4}$ x $5\frac{1}{4}$ x $\frac{7}{8}$ inch.
Weight, $\frac{7}{8}$ pound.

Universal Center Finders

Patented July 3, 1906



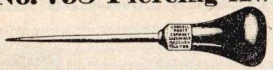
SHOWING OPERATION

This device accurately locates the center of any round, square, rectangular, or oval piece of material within its capacity, by merely drawing two lines the intersection of which must be the center point. Made entirely of steel. and nickel plated.

No. 341. Capacity 0 to 2 inches. Price, each..... (YISEV) $1.40
No. 342. Capacity 0 to $3\frac{3}{8}$ inches. Price, each..... (YISOY) 1.70
No. 343. Capacity 0 to $5\frac{7}{8}$ inches. Price, each..... (YISTA) 2.00

Packed one in a carton.

No. 798 Piercing Awl



An extremely useful little tool for piercing thin sheets of soft metals and other materials or wherever a slim, keen-pointed blade is required. The blade is 2½ inches long and made of tool steel carefully tempered and nicely polished. The handle is made of hard wood with an attractive lacquer finish.

Length of blade, 2½ inches; overall, 4⅛ inches.
Net weight, ¾ ounce.

Price, per dozen.....(ZEGOB) $3.60

Packed one dozen in a carton, 4⅜ x 3¼ x 2¼ inches.
Weight, 8 ounces.

No. 799 Piercing Awl

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For piercing thin sheets of soft metals and other materials and for a great variety of uses where a slim, keen-pointed blade is required. The blade is 2½ inches long and made of tool steel carefully tempered and nicely polished. The handle is made of hard wood with an attractive lacquer finish.

Length of blade, 2½ inches; overall, 6⅛ inches.
Net weight, ¾ ounce.

Price, per dozen.....(ZEGUC) $3.60

Packed one dozen in a carton, 6½ x 2⅞ x 1⅝ inches.
Weight, 11 ounces.

Ship Carpenters' Awl
No. 335

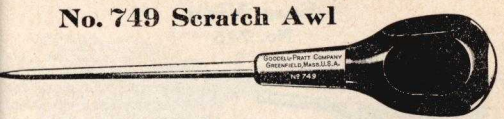
This is a short, stocky awl generally used by bridge builders and ship carpenters. It is a strong, serviceable tool. The blade is hammer forged from good tool steel, and is carefully hardened, tempered, and polished. The handle, which is polished hard wood, mahogany finish, 1¼ inches in diameter, is protected by a heavy ferrule.

Length of blade, 2½ inches; overall, 5 inches. Net weight, 1 ounce.

Price, per dozen.....(YIRSA) $3.30

Packed one dozen in a carton, 5½ x 4 x 2¾ inches. Weight, 15 ounces.

No. 749 Scratch Awl



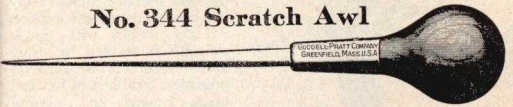
This fine awl is provided with a flush steel head that is locked n to the hammer-forged tool steel blade, which is carefully hard-ned, tempered, and polished. The handle is hard wood, mahogany nish, protected by a heavy steel ferrule, and having five flat faces nat give an exceptional grip and also prevent rolling.

The tool has a $4\frac{1}{4}$-inch blade, is $8\frac{1}{8}$ inches long over all, and weighs bout 4 ounces.

rice, each..... (ZAWIL) $0.70

Packed one half dozen in a carton, $8\frac{3}{4}$ x $5\frac{1}{4}$ x $1\frac{3}{4}$ inches.
Weight, $1\frac{3}{4}$ pounds.

No. 344 Scratch Awl



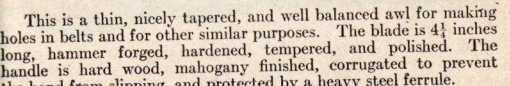
This is an exceptionally well made and nicely balanced awl. PAGE
The blade is hammer-forged tool steel, carefully hardened, tempered, 327
nd polished. The handle is hard wood, mahogany finish, $1\frac{1}{2}$ inches in liameter, protected by a heavy steel ferrule.

The tool has a 4-inch blade, is 7 inches long over all, and weighs bout 2 ounces.

Price, per dozen..... (YISUZ) $5.00

Packed one half dozen in a carton, $7\frac{3}{4}$ x 5 x $1\frac{1}{2}$ inches.
Weight, 14 ounces.

No. 336 Belt Awl



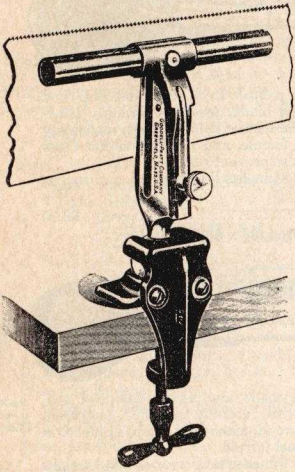
This is a thin, nicely tapered, and well balanced awl for making holes in belts and for other similar purposes. The blade is $4\frac{1}{4}$ inches long, hammer forged, hardened, tempered, and polished. The handle is hard wood, mahogany finished, corrugated to prevent the hand from slipping, and protected by a heavy steel ferrule.

The tool is $8\frac{1}{2}$ inches long over all, and weighs about 2 ounces.

Price, per dozen..... (YIRTE) $5.00

Packed one half dozen in a carton, $9\frac{1}{4}$ x $3\frac{1}{2}$ x $1\frac{1}{4}$ inches.
Weight, 1 pound.

Saw Vise
No. 745



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The jaw construction of this new saw vise eliminates the chatter, squeal, and vibration. The jaws are of steel, concaved, giving an even, double contact on both sides of the saw for their entire length of 10 inches.

The jaws are self-aligning, which insures the clamping pressure from the knurled thumb screw being equally distributed over their entire length. By removing a single screw both jaws can be taken out and the vise packed away in a comparatively small space.

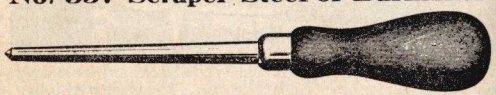
Light weight with ample strength is secured by using aluminum in this vise wherever possible. Finished in red and black enamel and natural aluminum, with all exposed steel parts nicely polished.

The ball and socket joint gives unusual flexibility in filing position. The tool clamps to any bench $\frac{3}{4}$ to $2\frac{1}{2}$ inches thick. Height above bench, $9\frac{1}{2}$ inches. Weight, 5 pounds.

Price, each . . . . . (ZAVUM) $6.00

Packed one in a carton, $17\frac{1}{2}$ x $4\frac{7}{8}$ x $4\frac{3}{4}$ inches. Weight, $5\frac{1}{2}$ pounds.

No. 357 Scraper Steel or Burnisher



This scraper steel, or burnisher, has a round tool steel blade correctly tapered for turning a scraper edge. The blade is $4\frac{1}{2}$ inches long, hardened and polished. The handle is polished hard wood, protected by a nickel-plated steel ferrule.

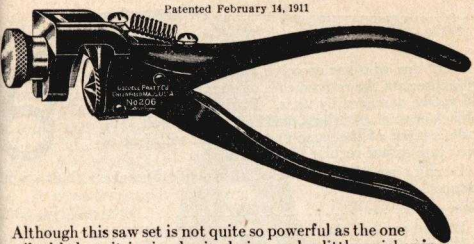
Length over all, $8\frac{3}{4}$ inches. Net weight, 4 ounces.

Price, each . . . . . (YIZHY) $0.55

Packed one in a carton, $9\frac{1}{2}$ x $1\frac{3}{4}$ x $1\frac{1}{2}$ inches. Weight, 5 ounces.

No. 206 Saw Set

Patented February 14, 1911



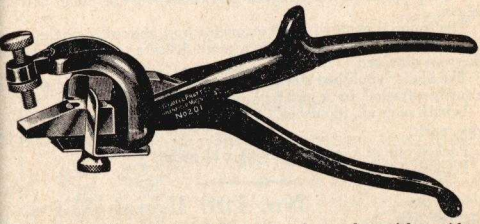
Although this saw set is not quite so powerful as the one escribed below, it is simpler in design and a little quicker in tion. The frame and handles are malleable iron, finished in red and ack enamel. The jaws and anvil are tempered steel, well polished. It is readily adjusted, making a thoroughly efficient tool. Length ver all, 6¾ inches. Net weight, 9 ounces.

rice, each.....(YEMYP) $2.00

Packed one in a carton, 7¼ x 3¼ x 1½ inches. Weight, ¾ pound.

PAGE 329

No. 201 Saw Set



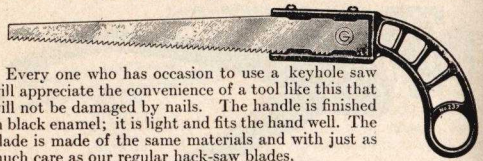
This saw set is so designed that it can be used on either wide or arrow saws; and it is so constructed that the teeth of the saw are lways in sight of the operator, insuring accuracy in setting. The rame and handles are made of malleable iron, finished in red and black namel. The jaw and inserted anvil are made of tempered steel, and re polished. The adjustable gauge is very easily set in position.

This is well made, and is a very practical tool. It is 8 inches long ver all, and weighs 14 ounces.

rice, each.....(YEMIL) $2.00

Packed one in a carton, 8½ x 3¼ x 1½ inches. Weight, 1 pound.

No. 237 Keyhole Hack Saw



Every one who has occasion to use a keyhole saw will appreciate the convenience of a tool like this that will not be damaged by nails. The handle is finished in black enamel; it is light and fits the hand well. The blade is made of the same materials and with just as much care as our regular hack-saw blades.

Length over all, 9½ inches. Cutting edge, 5¼ inches. Net weight, 2 ounces.

Price, each..... (YEYAT) $0.45

Packed one half dozen in a box, 10½ x 3 x 1½ inches.
Weight, 1⅝ pounds.

Extra keyhole hack-saw blades, per dozen..... (YEYDB) $2.20

No. 36 Pattern Makers' Spoke Shave

PAGE 330

This spoke shave was designed particularly for the use of pattern makers.

The frame is made of black enameled iron, shaped to fit the hand of the operator, making possible a more delicate touch than can be otherwise obtained.

The blade is polished steel, 2 inches wide; it is well made and can be easily adjusted, back and forward.

Length over all, 9¼ inches. Net weight, 10¼ ounces.

Price, each..... (YACUX) $1.00

Packed one in a carton, 10 x 2½ x 1½ inches.
Weight, 13 ounces.

No. 196 Bench Hook

Patented November 1, 1910

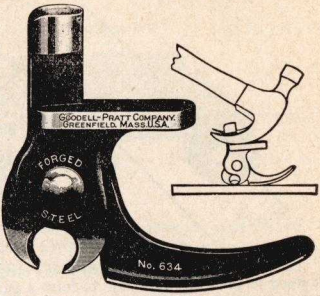
This hook can be readily inserted in any bench by boring two holes of the proper size. The height is easily adjusted without any tools. It is provided with four different faces, any one of which can be used at will. The entire tool is nickel plated.

Price, each..... (YELLO) $1.60

Packed one in a carton, 3¼ x 2¼ x 2¼ inches.
Weight, 10 ounces.

No. 634 Pocket Nail Puller

Patented June 5, 1923



This tool is sure to be most popular with carpenters and householders on account of its simple construction, compactness and strength. It is small enough to be dropped into the pocket and yet is as strong as a tool of this kind needs to be. It is made entirely of drop-forged steel.

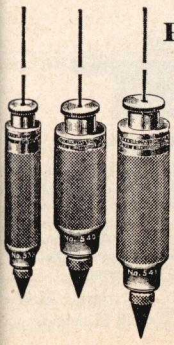
To use this pocket nail puller, open jaws and place them over the nail head. Drive in the jaws by pounding on the head of the puller with a hammer. When the jaws have engaged the nail head, insert the claws of the hammer under the head of the puller and the compound leverage enables any nail to be pulled with ease. It will pull cement coated nails out of knots without difficulty.

PAGE 331

This pocket nail puller is quicker, more convenient, and easier to operate than a large nail puller. Weight, 6 ounces.

Price, each ..... (ZABYS) $1.00

Packed one in a carton, $3\frac{3}{4}$ x $3\frac{3}{16}$ x $\frac{7}{8}$ inch. Weight, 8 ounces.



Plumb Bobs

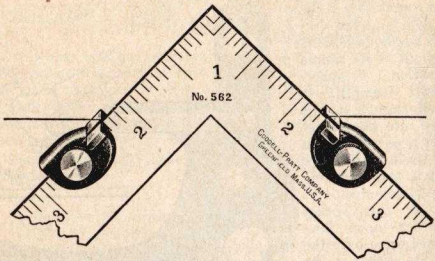
These plumb bobs are made to satisfy the most particular workmen. The bodies are brass, knurled, polished, and nickel plated, and filled with heavy metal to give the required weight. The points are steel, tempered, ground, and polished. Every one is furnished with six feet of laid twine.

	Weight	Price, Each
No. 539.	8 ounces..... (YUEWK)	$1.40
No. 540.	12 ounces..... (YUTRE)	1.80
No. 541.	16 ounces..... (YUFUV)	2.00

Packed one in a carton.

No. 562 Stair Gauge Attachments

For Steel Squares



These attachments, for a carpenter's steel square, can be readily clamped in place on the blade to form a gauge for laying out stair stringers, marking any desired angle for sawing, or many other uses. They are small and compact; nicely finished in white nickel. The set screws are polished. No squares furnished.

PAGE 332

Price, per pair of Attachments ..... (YUJTA) $1.00

Packed three pair in a carton, $3\frac{3}{4}$ x $2\frac{1}{8}$ x $1\frac{1}{2}$ inches. Weight, 10 ounces.

No. 333 Iron Plane Gauge

Illustration shows Gauge attached to Plane. No Plane furnished

When this tool is attached to any iron plane by means of the thumb screws provided, it enables the operator to accurately plane bevels of any desired angle or make even joints without the continuous use of a bevel or try square. The device is so simple that even inexperienced workmen can do accurate work in a very short time.

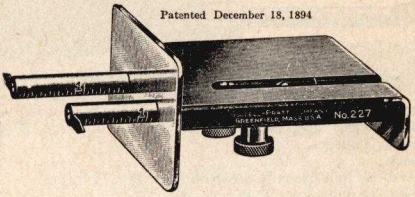
The tool is made entirely of iron and steel, fully nickel plated. The flat surface of the guide is ground to insure its accuracy.

Price, each ..... (YIRET) $2.40

Packed one in a carton, $8\frac{1}{4}$ x 5 x 2 inches. Weight, $1\frac{1}{4}$ pounds.

Combination Butt Gauge
No. 227

Patented December 18, 1894



This tool is designed especially for door hanging and mortise k. It is provided with three hardened double edge spurs, the one he back of the double end bar being adjustable for the regula- of clearance.

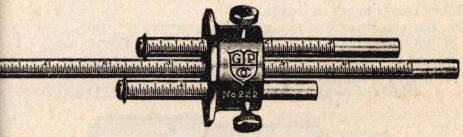
The tool is well made, entirely of steel, and is polished and nickel ed.

e, each..... (YETRE) $1.65

PAGE 333

Packed one in a carton, $3\frac{3}{4}$ x $2\frac{1}{2}$ x $1\frac{3}{4}$ inches.
Weight, 8 ounces.

Roller Gauges



These gauges have round, graduated steel beams with roller kers. The graduations are very clear and distinct, and are in s of an inch. The head is fitted with a knurled thumb screw ach beam. Each tool is fully polished and nickel plated.

		Price, Each
220.	With One Single 8-inch Beam..... (YERYT)	$1.40
221.	With Two Beams, 4 and 8 inches..... (YESAP)	1.80
222.	With Three Beams, 3, 4, and 8 inches..... (YESOS)	2.20

Packed one in a carton, $8\frac{3}{4}$ x $2\frac{1}{8}$ x $2\frac{1}{8}$ inches.
Weights, 10 to 12 ounces.

No. 583 Tack Claw

This is a practical and serviceable tool for pulling all sizes of tacks. The blade is forged from a high grade of $\frac{5}{16}$-inch steel, hardened, tempered, and polished. The handle is hard wood, nicely polished. Length over all, 7 inches. Length of blade, 3 inches. Net weight, 3 ounces.

Price, each.....(YUNGY) $0.55

Packed one half dozen in a carton, $7\frac{1}{2}$ x $4\frac{1}{2}$ x $1\frac{3}{4}$ inches.
Weight, $1\frac{1}{4}$ pounds.

No. 724 File Handle Assortment

PAGE 334

These handles are made of thoroughly seasoned hard wood with polished mahogany finish. The shape is a most comfortable one in use. The polished nickeled ferrule is amply heavy to allow firm seating of the file tang without danger of splitting. The assortment consists of twelve handles made up of five different sizes from 3 inches to $4\frac{3}{4}$ inches in length.

Price, per assortment of twelve.....(ZASUK) $2.40

Packed one dozen assorted in a carton, 6 x $4\frac{3}{4}$ x $2\frac{5}{8}$ inches.
Weight, $1\frac{1}{4}$ pounds.

No. 726 Handle Assortment

These handles will be found most excellent for replacements and for handling any tool with a round shank within their capacity. They are made of thoroughly seasoned hard wood with a highly polished mahogany finish fluted to give a sure grip. This is the same handle used on our No. 909 Screw-Driver and the assortment is made up of twelve handles as used on the 2, 4, 5, 6, and 8 inch sizes.

Price, per assortment of twelve.....(ZATAG) $2.40

Packed one dozen assorted in a carton, $7\frac{3}{4}$ x $4\frac{3}{4}$ x $2\frac{3}{8}$ inches.
Weight, $1\frac{1}{4}$ pounds.

Floor Scraper
No. 369
Patented March 6, 1917

This floor scraper has a selected hard wood handle with polished hogany finish, 11 inches long, turned down to afford a comfort- e grip, and set at the correct angle. The weight of the large usting knob, which also acts as a handle, supplies most of the essary pressure to the blade, making wood scraping a compara- ely easy operation.

The blade, which is reversible, is made from the finest quality of l steel, 3 x 4½ inches. It is hardened and tempered in such a way t it will hold a good cutting edge.

Net weight of tool, 1½ pounds.

ce, each.....(YOBHA) $1.50

Packed one in a carton, 12 x 3⅜ x 1¾ inches. Weight, 1¼ pounds.

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Floor Scraper
No. 469
Patented March 6, 1917

This floor scraper has a selected hard wood handle with polished hogany finish, 11 inches long, turned down to afford a comfort- e grip, and set at the correct angle. It has a wing adjusting nut ead of a knob, and is provided with a curved plate for applying ssure to the blade.

The blade, which is reversible, is made from the finest quality of l steel, 3 x 4½ inches. It is hardened and tempered in such a way t it will hold a good cutting edge.

Net weight of tool, 1⅝ pounds.

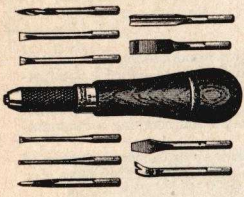
ce, each.....(YOPZO) $1.65

Packed one in a carton, 11½ x 3¼ x 2 inches. Weight, 1¼ pounds.

Hollow Handle Tool Set

No. 11

With 10 Forged Tools



This popular tool has recently been provided with a new style of chuck which greatly increases its effectiveness.

It has a beautifully polished rosewood handle with a screw cap. The cap can be easily removed for access to the set of tools which are contained inside of the handle when not in use.

PAGE 336

There are ten small tools in this set: a gimlet bit, four different size awls, a reamer, a gouge, a flat chisel, a screw-driver, and a tack claw. They are all made in our own forging plant under the same careful supervision as our other high-grade forged tools. They are made of a good grade of tool steel, correctly hardened and tempered.

The all-steel chuck on this tool is extra long, giving a very firm grip that is easily tightened or loosened. It is nickel plated and polished.

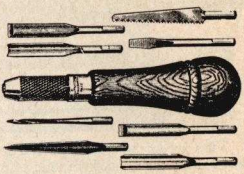
Length of tool handle, without tools, $6\frac{1}{2}$ inches. Approximate length of tools, $2\frac{1}{4}$ inches. Weight, complete, 6 ounces.

Price, each ..... (WYKKA) $2.70

Packed one set in a carton, $7 \times 1\frac{3}{4} \times 1\frac{3}{4}$ inches.

Weight, 8 ounces.

Hollow Handle Tool Set
No. 12



This set is of exactly the same quality as the No. 11 shown on page 336. It is very much larger, however, and is equipped with only eight tools.

The handle of this tool is beautifully polished rosewood with a screw cap. The cap can be easily removed for access to the tools which are contained inside of the handle when not in use.

There are eight tools in this set. They are all made in our own forging plant under the same careful supervision as our other high-grade forged tools. They are made of a good grade of tool steel, correctly hardened and tempered.

The all-steel chuck on this tool is extra long, giving a very firm grip and is easily tightened or loosened. It is polished and nickel plated.

PAGE 337

Length of tool handle, without tools, 7¾ inches. Approximate length of tools, 4 inches. Weight, complete, 12 ounces.

Price, each ..... (WYLEM) $3.70

Packed one set in a carton, 8 x 2 x 2 inches.

Weight, 14 ounces.

Hollow Handle Tool Set
No. 12½

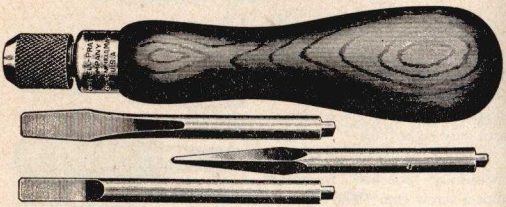
Same as above, but with two different size awls in place of the large size gouge.

Price, each .... (WYLLA) $3.70

Packed one set in a carton, 8 x 2 x 2 inches.

Weight, 14 ounces.

Screw-Driver Set



This set consists of a polished hard wood handle, a strong steel chuck, and three blades made of the very best steel, carefully tempered and highly polished.

Price, Each

No. G20. With 2 screw-driver blades and 1 reamer.. (WYUTZ) $1.10

Packed one in a carton, $6\frac{1}{2}$ x $1\frac{3}{4}$ x $1\frac{1}{2}$ inches.

Weight, 8 ounces.

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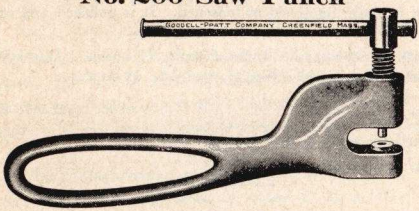
No. 200 Saw Punch



There is so much variation in the sizes of various styles of butchers' saw frames that most of the better class of butchers' saw blades are not punched when they leave the factory. All dealers in and users of these blades will find this inexpensive device very convenient for punching the necessary holes.

The frame is made of nickel plated, malleable iron. The screw and crossbar are polished steel. The punch and die are made from fine tool steel, carefully tempered.

Length over all, $5\frac{3}{4}$ inches. Size of punch, $\frac{11}{64}$ inch. Net weight, 7 ounces.

Price, each.... (YEMAJ) $1.00

Packed one in a carton, $6\frac{1}{4}$ x $2\frac{3}{4}$ x $\frac{3}{4}$ inch. Weight, 8 ounces.

Butcher's Saw Coils

PAGE
339

These butchers' saws are made from the finest quality of spring steel, tempered, ground, and polished. The teeth are filed, set, and re-filed after setting, and are consequently ready for immediate use. The teeth are correctly shaped for free cutting. They can be re-filed, but their first cost is so low that it is hardly profitable. Nothing that we can say about these saws will be so convincing as an actual trial.

Put up in 25 and 50 foot coils as follows:

	Length	Weight	Width	Teeth per Inch		Price, per Coil
No. 310	50 feet	2 pounds	$\frac{1}{2}$ inch	13	(YIJON)	$6.00
No. 311	50 feet	$2\frac{1}{2}$ pounds	$\frac{5}{8}$ inch	11	(YIJUP)	6.00
No. 312	50 feet	$3\frac{1}{4}$ pounds	$\frac{5}{8}$ inch	11	(YIKAL)	6.40
No. 313	50 feet	4 pounds	1 inch	11	(YIKEM)	7.50
No. 314	50 feet	$5\frac{1}{4}$ pounds	$1\frac{1}{4}$ inches	11	(YIKLA)	8.80
No. 250	25 feet	1 pound	$\frac{1}{2}$ inch	13	(YIAHJ)	3.00
No. 251	25 feet	$1\frac{1}{4}$ pounds	$\frac{5}{8}$ inch	11	(YIALM)	3.00
No. 252	25 feet	$1\frac{3}{4}$ pounds	$\frac{5}{8}$ inch	11	(YIANP)	3.20
No. 253	25 feet	$2\frac{1}{4}$ pounds	1 inch	11	(YIAST)	3.75
No. 254	25 feet	$2\frac{3}{4}$ pounds	$1\frac{1}{4}$ inches	11	(YIAZB)	4.40

A saw punch suitable for punching these blades is shown on the page opposite.

Butchers' Saw Blades

TRADE MARK REGISTERED U. S. PATENT OFFICE

These blades are made from the finest quality of spring steel, tempered, ground, and polished. The teeth are filed, set, and re-filed after setting. We make these blades in four widths, $\frac{5}{8}$ inch, $\frac{3}{4}$ inch, 1 inch, and $1\frac{1}{4}$ inches; all with 11 teeth to the inch.

As the length of different makes of frames varies considerably, these blades are not punched. A saw punch suitable for punching them is shown on page 338.

Length	Per Dozen $\frac{5}{8}$ inch wide	Per Dozen $\frac{3}{4}$ inch wide	Per Dozen 1 inch wide	Per Dozen $1\frac{1}{4}$ inches wide
12-inch	$1.90	$2.00	$2.30	$2.50
14-inch	2.10	2.20	2.50	2.90
16-inch	2.40	2.50	3.00	3.30
18-inch	2.70	3.00	3.40	3.70
20-inch	3.10	3.30	4.00	4.20
22-inch	3.40	3.70	4.30	4.60
24-inch	3.70	4.00	4.70	5.00
26-inch	4.00	4.20	5.00	5.50
28-inch	4.20	4.50	5.20	5.70

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No. 71 Butchers' Saw Blades

These blades are offered to meet the demand for a good blade at a moderate price. They can be re-sharpened if desired. They are made from a good quality of steel, tempered but not polished. The teeth are filed, set, and re-filed after setting. All of these blades are $\frac{5}{8}$ inch wide and have 11 teeth to the inch. The holes are punched.

		Per Dozen
14-inch	(YAMEF)	$1.80
16-inch	(YAMFE)	2.00
18-inch	(YAMHO)	2.20
20-inch	(YAMIG)	2.40
22-inch	(YAMKY)	2.60
24-inch	(YAMOH)	2.80
26-inch	(YAMUJ)	3.00
28-inch	(YAMAY)	3.20

Packed six dozen in a carton.

Butchers' Saw Frames

No. 75

Made from Round Edge Steel

These frames are exceptionally well made and nicely finished. Not only are they attractive in appearance, but they are also popular with users on account of their nice balance.

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The frames are made of heavy $1\frac{1}{4}$ x $\frac{1}{4}$ inch round edge steel, nicely polished. They are rigid and amply strong to permit the necessary tension on the blade obtained by turning up the wing nut provided for the purpose. The handles are correctly shaped and well finished. End of frame is offset so that blade lines up with handle.

Minimum depth of throat, 5 inches.

Each frame is equipped with one of our very best tempered and polished butchers' saw blades.

	Net Weight		Price, Each
4 inch	$2\frac{1}{8}$ pounds	(YANOJ)	$2.80
5-inch	$2\frac{3}{4}$ pounds	(YANUK)	2.90
6-inch	$2\frac{1}{2}$ pounds	(YANYL)	3.00
7-inch	$2\frac{5}{8}$ pounds	(YAODY)	3.10
8-inch	$2\frac{3}{4}$ pounds	(YAOJD)	3.20
9-inch	$2\frac{7}{8}$ pounds	(YAOLG)	3.30
10-inch	3 pounds	(YAONJ)	3.40

Packed one third dozen in a carton.

No. 78 Dehorning Saw

This saw has a strong steel frame, white nickel finish, and a black enameled iron handle. It is furnished complete with a special 10-inch blade. Net weight, 1½ pounds.

Price, each..... (YAPGA) $1.30

Packed one in a carton, 14¾ x 6½ x 1¼ inches.
Weight, 2 pounds.

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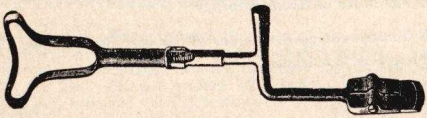
Dehorning Saw Blades

These blades are made 10 inches long only, and are particularly adapted for dehorning. For best results, they should be used in the frames described above.

Price, per dozen..... (YAPHE) $1.00

No. 549 Horseshoers' Butteris



This butteris is a well designed tool for paring hoofs. The handle is adjustable for length, and shaped to fit the arm, making it very easy to use.

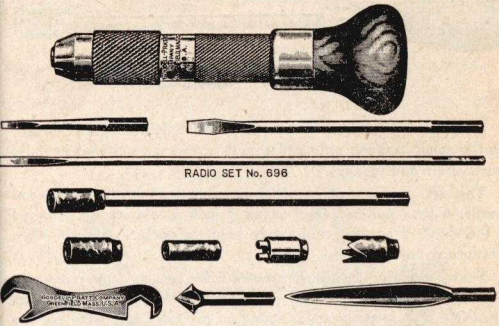
The blade is made of crucible steel, hardened, tempered, and ground. It will hold a good edge.

Price, each..... (YUGYX) $4.50
Extra blades, each..... .60

Packed one in a carton, 18 x 4¾ x 3½ inches. Weight, 2¼ pounds.

Radio Tool Set

No. 696



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A very complete set of tools selected to meet the requirements of the enthusiast who builds his own set or who is constantly experimenting with new hook-ups and units. It consists of the following tools:

1 Ratchet Tool Holder.
1 8½-inch Screw-Driver; Blade, $\frac{1}{4}$ inch wide.
1 4½-inch Screw-Driver; Blade, $\frac{3}{16}$ inch wide.
1 2-inch Screw-Driver; Blade, $\frac{1}{8}$ inch wide.
1 Countersink.
1 6-inch Shank for Holding Sockets.
3 Hexagon Sockets: $\frac{3}{8}$, $\frac{5}{16}$, and $\frac{1}{4}$ inch.
1 Wire Bender for Bus Wire.
1 Reamer.
1 Double End Hexagon Wrench for Jack Nuts.

Each and every tool is finely finished and thoroughly practical and dependable for the work for which it is designed.

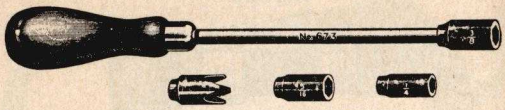
Weight, 10 ounces.

Price, per set, complete.....(ZANDO) $4.00

Packed one in a carton, 10⅜ x 1⅝ x 1½ inches.

Weight, ¾ pound.

No. 673 Radio Socket Wrench



A finely manufactured and finished set for tightening and loosening the small hexagon nuts and thumb screws encountered in radio construction and repair.

The set consists of a polished, mahogany-finish, hard wood handle, with a polished steel shank $\frac{1}{4}$ inch in diameter. The end of the shank is squared and slit to hold the sockets securely when it is sprung into them.

Four sockets are furnished: one each for hexagon nuts measuring $\frac{3}{8}$, $\frac{5}{16}$, and $\frac{1}{4}$ inch between flats, and a four-jawed socket for handling knurled thumb screws such as found on dry cells, etc. The sockets are deeply drilled to accommodate screw ends and the hexagon portion accurately broached to size. The sockets are steel, well case-hardened.

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Length over all, $8\frac{1}{2}$ inches. Net weight, 4 ounces.

Price, per set..... (ZAIRG) $1.00

Packed one set in a carton, $8\frac{1}{4}$ x $1\frac{1}{4}$ x $1\frac{1}{4}$ inches.

Weight, 5 ounces.

No. 674 Radio Tool Set

This convenient set consists of a complete No. 673 radio wrench set, as described above, and one each, No. 355 $6\frac{1}{2}$-inch screw-driver and No. 331 8-inch screw-driver. These screw-drivers will be found fully described on page 227.

Net weight of set, 7 ounces.

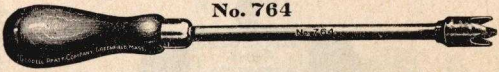
Price, per set..... (ZAJAT) $2.30

Packed one set in a carton, 12 x 2 x $1\frac{1}{8}$ inches.

Weight, 8 ounces.

Prong Wrench for Thumb Nuts

No. 764



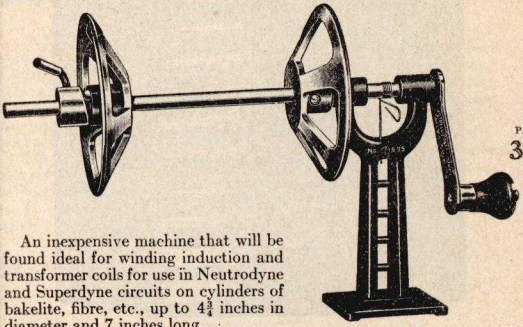
This is the same handle and shank used in the No. 673 set opposite, with a four-jawed socket for thumb nuts solidly affixed.

Net weight, 3 ounces.

Price, each ..... (ZAZPO) $0.55

Packed six in a carton, $9\frac{1}{2}$ x $3\frac{3}{4}$ x $1\frac{1}{2}$ inches.

No. 695 Coil Winder



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An inexpensive machine that will be found ideal for winding induction and transformer coils for use in Neutrodyne and Superdyne circuits on cylinders of bakelite, fibre, etc., up to $4\frac{3}{4}$ inches in diameter and 7 inches long.

The cone-shaped aluminum drive discs automatically center the cylinders placed between them. The sliding disc is set and held in position by the sliding collar. The right-hand face of this collar is finished at an angle and bears against the nib on the disc hub, so that any slippage of the disc is immediately transformed into a tightening pressure on the cylinder.

The spring on the spindle between the bearings prevents the coil from unwinding and releasing the tension on the coil wire. This lock can be released when desired by raising the loop end of the wire.

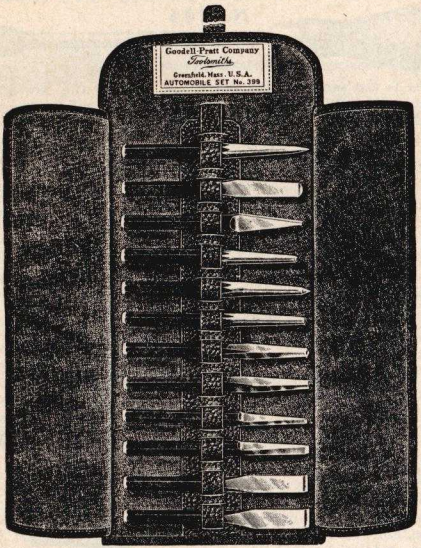
The base is substantial and finished in black enamel, and can be fastened to any table or bench. The discs are finished in red enamel and natural aluminum. All exposed steel parts nicely polished.

Length over all, $14\frac{1}{2}$ inches. Weight, 3 pounds.

Price, each ..... (ZANBE) $4.80

Packed one in a carton, $12\frac{1}{4}$ x 7 x 3 inches. Weight, $3\frac{3}{4}$ pounds.

No. 399 Motor Set



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A very handy set of forged chisels and punches put up in a serviceable and convenient leatherette case with a strap to secure it when rolled up. The assortment of tools has been made with care to give the set the greatest possible usefulness. The twelve tools are as follows:

No. 1150 $\frac{1}{4}$" Cold Chisel
No. 1154 $\frac{3}{8}$" Cold Chisel
No. 1156 $\frac{1}{2}$" Cold Chisel
No. 1140 $\frac{1}{8}$" Cape Chisel
No. 1142 $\frac{1}{4}$" Cape Chisel
No. 1176 $\frac{5}{32}$" Square Chisel
No. 1178 $\frac{5}{32}$" Diamond Point Chisel
No. 1190 $\frac{1}{8}$" Round Nose Cape Chisel
No. 1195 $\frac{5}{32}$" Solid Punch
No. 1198 $\frac{5}{32}$" Cup Punch
No. 1199 Prick Punch
No. 1202 Center Punch

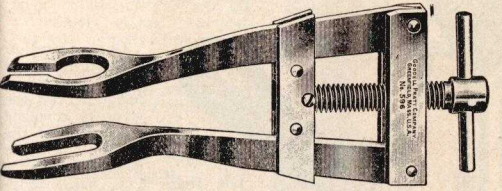
Each tool is forged from octagon alloy steel, carefully hardened and tempered with well-ground and polished points and heads. They are fully described on pages 170, 171 and 172.

Price, per set..... (YOFYR) $4.30

Packed one set in a carton, $6\frac{1}{2}$ x $3\frac{1}{4}$ x 3 inches. Weight, $2\frac{1}{4}$ pounds.

Valve Lifter
No. 596

Patented September 11, 1923



This valve lifter is a strong and powerful all-steel tool that will be appreciated by all automobile mechanics. It is short and compact enough to be used in any car, and powerful enough to compress any valve spring and hold it under compression. It is used by inserting the jaws beneath the valve spring, which is compressed as the jaws are opened by turning the handle. As the jaws move on hardened rollers, and the screw on ball bearings, the tool is very easy to operate.

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The design of the larger circular opening in the upper jaw allows this jaw to extend above the small connecting parts on and about the valve stem, thus allowing them to be easily removed.

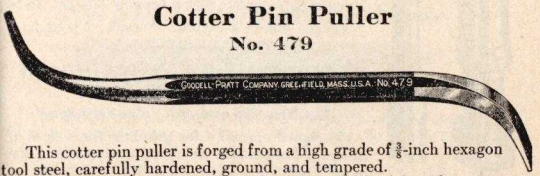
The arms of this tool are drop-forged steel. All exposed parts are nicely polished.

Length over all, 6 inches. Net weight, 9 ounces.

Price, each ..... (YUPFO) $2.50

Packed one in a carton, $6\frac{1}{4} \times 2\frac{5}{16} \times 1\frac{7}{16}$ inches. Weight, $\frac{3}{4}$ pound.

Cotter Pin Puller
No. 479

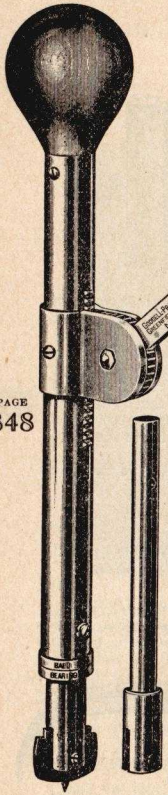


This cotter pin puller is forged from a high grade of $\frac{3}{8}$-inch hexagon tool steel, carefully hardened, ground, and tempered.

Length from point to spreader, 8 inches. Net weight, $3\frac{1}{2}$ ounces.

Price, per dozen ..... (YOSBE) $4.40

Packed one dozen in a carton, $8\frac{1}{2} \times 2\frac{3}{4} \times 1\frac{1}{2}$ inches. Weight, $2\frac{3}{4}$ pounds.



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Valve Grinder

No. 747

Patented December 9, 1924

One upward or downward stroke of the operating handle at the side gives 1½ complete revolutions of the spindle. Makes possible any variation from short, quick reciprocations to longer ones at the discretion of the operator.

An easily attached extension, gives 5 inches additional length or a total below the gear of 11¼ inches, ample to reach the deepest valve.

The mechanism is simple but powerful. The leverage obtained through the long operating handle and transmitted through the ball bearing spindle makes grinding of the larger size valves an easy task even though they be badly gummed up. The blade furnished will fit either slotted or spotted valves.

The tool is made of nicely finished steel, with comfortable handles of polished hard wood in mahogany finish.

Length over all, without extension, 12¼ inches.
Length over all, with extension, 17¼ inches.
Weight, 1¾ pounds.

Price, each, complete with extension (ZAWAJ) $4.50

Packed one in a carton. Weight, 2 pounds.

Vacuum Cup Attachment

No. 847

For Nos. 288 and 467 Valve Grinders

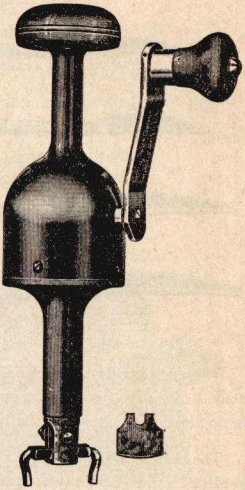
Designed specially for grinding the valves of Model A Ford engine which are made without the usual "spots" or slots. Fits valve grinders on following page.

Price, each..... (ZEMUJ) $0.30

Packed one in a carton, 2¼ x 1½ x 1½ inches. Weight, 3 ounces.

Automobile Valve Grinders

Patented July 7, 1914



These tools will be found a great convenience in grinding automobile valves. Although this was formerly drudgery, it is now done easily and rapidly with these tools. By means of a simple operating mechanism, the spindle is caused to rotate back and forth when the crank is turned continuously in one direction.

The tools are designed to have sufficient weight so that additional pressure need not be applied to the valve seat.

Both an adjustable spanner and a blade are provided with each of these tools in order that they may be used on different types of cars.

Length over all, $10\frac{1}{4}$ inches.

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No 288. Enameled iron frame. Weight, $3\frac{3}{4}$ pounds.

Price, each..... (YIFAG) $4.00

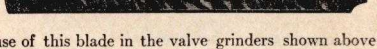
No. 467. Polished aluminum frame. Weight, $2\frac{1}{4}$ pounds.

Price, each..... (YOPVA) $6.00

Packed one in a carton, $10\frac{3}{4}$ x $3\frac{3}{4}$ x 3 inches.

Model A Ford valves handled with attachment on opposite page.

No. 518 Valve Grinder Blade



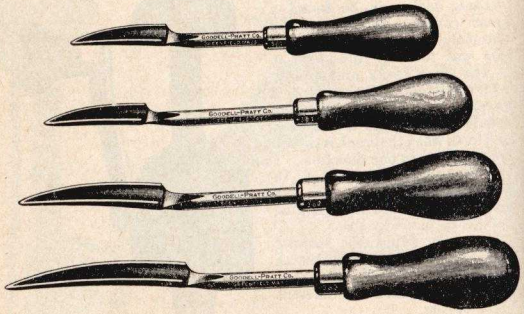
The use of this blade in the valve grinders shown above enables the user to grind valves that he would otherwise be unable to reach with these tools.

The blade is made of case-hardened steel, 8 inches long. Net weight, $2\frac{1}{2}$ ounces.

Price, each..... (YUBNE) $0.45

Packed one half dozen in a carton, $8\frac{1}{2}$ x $1\frac{3}{8}$ x $\frac{5}{8}$ inch.
Weight, $1\frac{1}{8}$ pounds.

Bearing Scrapers



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We unreservedly recommend these bearing scrapers as the best made. The slightly curved, tapering, and recessed blade is designed to do nice scraping without chattering.

The blades are forged from a very high grade of tool steel correctly hardened and so carefully tempered that they will scratch glass and hold their keen razor-like edge over a long period.

After being dulled by long usage they can be easily sharpened by a few strokes on an oil stone.

The polished round shanks and large polished mahogany finished handle make a most attractive tool and a comfortable one to use.

	Cutting Edge	Length over all		Price, Each
No. 581	1½ inches	8 inches	(YUNDO)	$0.60
No. 381	2½ inches	10 inches	(YOCYP)	.90
No. 382	3½ inches	11 inches	(YODAK)	1.00
No. 383	4½ inches	12 inches	(YODEL)	1.10

Packed one half dozen in a carton.

Bearing Scraper Set
No. 740 A

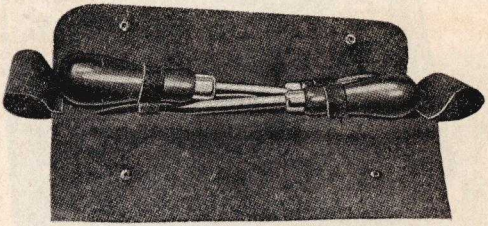
This set consists of one each of the No. 581, No. 381 and No. 382 bearing scrapers, illustrated and described on the opposite page. The blades are 1½, 2½ and 3 inches long, making a very popular and useful assortment.

Forged from fine quality steel and heat treated with special care to hold a keen edge.

Price, per set..... (ZAVIT) $2.50

Packed one set in a carton. Weight, 1⅛ pounds.

Bearing Scraper Set
No. 740



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Same as above but packed in a neat and durable flexible leather case to protect their cutting edges.

Price, per set..... (ZAVIK) $3.40

Packed one set in a carton. Weight, 1 pound.

Bearing Scraper Set
No. 471

This set consists of one of each of the following bearing scrapers which are described on the page opposite: No. 381, No. 382, and No. 383.

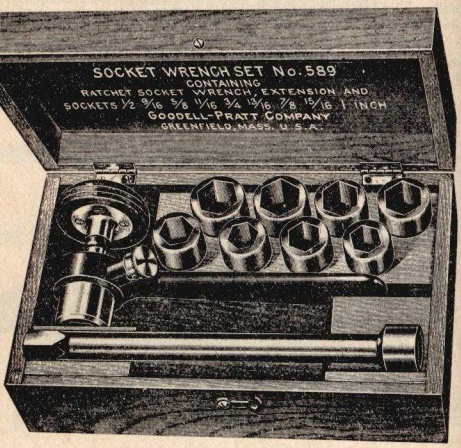
Net weight, 1 pound.

Price, per set..... (YORCO) $3.00

Packed one set in a carton, 12½ x 3¼ x 1½ inches. Weight, 1¼ pounds.

Socket Wrench Set

No. 589


SOCKET WRENCH SET No. 589
RATCHET SOCKET WRENCH CONTAINING EXTENSION AND
SOCKETS 1/2 9/16 5/8 11/16 3/4 13/16 7/8 15/16 1 INCH
GOODELL-PRATT COMPANY
GREENFIELD, MASS. U.S.A.

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This set consists of a powerful ratchet socket wrench with a 7-inch handle; a turned steel extension, 9 inches long, and eight extra sockets with ball frictions that fit either wrench or extension.

The set handles nine sizes of hexagon nuts as follows: $\frac{1}{2}$, $\frac{9}{16}$, $\frac{5}{8}$, $\frac{11}{16}$, $\frac{3}{4}$, $\frac{13}{16}$, $\frac{7}{8}$, $\frac{15}{16}$, and 1 inch.

Put up in a strong, attractive hard wood box, 10 x $5\frac{3}{8}$ x $3\frac{1}{4}$ inches. Net weight, $5\frac{1}{2}$ pounds.

Price, per set, complete.....(YUODS) $7.70

Each box packed in a carton, $10\frac{1}{2}$ x $6\frac{1}{2}$ x $3\frac{1}{2}$ inches.

Weight, 6 pounds.

No. 926 Ratchet Socket Wrench

Patented September 16, 1924

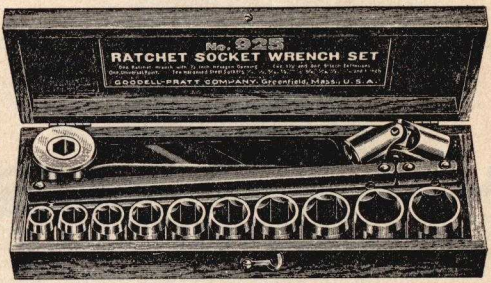
The carefully hardened socket of this wrench takes $\frac{1}{2}$-inch hexagon stock or nuts. The ratchet is extremely powerful and reliable and can be used either right or left hand. The overall length is $7\frac{7}{8}$ inches, giving a good leverage. Nicely finished in black enamel. Net weight, $\frac{7}{8}$ pound.

Price, each..... (ZIEGD) $2.00

Packed one in a carton. Weight, 1 pound.

No. 925 Ratchet Socket Wrench Set

With 10 Sizes of Sockets



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A very complete and convenient set put up in a neat, strong wooden box.

The set consists of a No. 925 Ratchet Wrench, illustrated and described above, a $1\frac{1}{2}$-inch extension, a 9-inch extension, a universal joint, and ten hardened steel sockets broached to exact size to fit the following sizes of hexagon nuts: $\frac{7}{16}$, $\frac{1}{2}$, $\frac{9}{16}$, $\frac{5}{8}$, $\frac{11}{16}$, $\frac{3}{4}$, $\frac{13}{16}$, $\frac{7}{8}$, $\frac{15}{16}$, and 1 inch.

Box measures $11\frac{1}{4}$ x $4\frac{1}{2}$ x 2 inches. Net weight, $4\frac{3}{8}$ pounds.

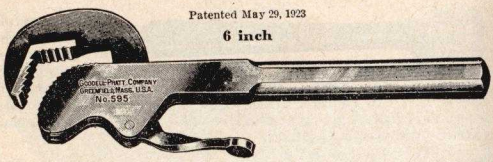
Price, per set, complete..... (ZIEBY) $8.50

Packed one set in a carton. Weight, $4\frac{3}{8}$ pounds.

No. 595 Chauffeurs' Universal Wrench

Patented May 29, 1923

6 inch



This chauffeurs' universal wrench is so named because it is self-adjusting for any size square or hexagon nut up to $\frac{5}{8}$ inch, and will hold round rods from $\frac{3}{16}$ inch to $\frac{1}{2}$ inch in diameter. The jaws are opened by pressing the trigger and automatically closed by means of a spring. It will firmly grip any shaped piece within its capacity.

The entire tool is strongly made from steel with hardened jaws. The handle is shaped to give a good grip.

Length over all, 7 inches. Net weight, 8 ounces.

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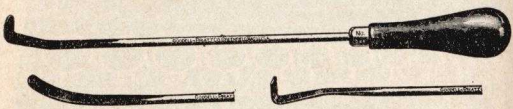
Price, each.....(YUPEC) $1.30

Packed one in a carton, $7\frac{1}{8}$ x $2\frac{1}{8}$ x $\frac{3}{4}$ inch. Weight, 10 ounces.

No. 568 Carbon Scraper Set



These carbon scrapers are forged from a high grade of $\frac{3}{16}$-inch round tool steel, hardened and tempered to have good scraping edges and yet be as springy as possible. The blades are 9 inches long and $\frac{7}{16}$ inch wide, with polished shanks.

The handles are nicely polished and properly shaped, making them very easy to use. The tools are attractive in appearance and well made.

Each scraper is $13\frac{1}{2}$ inches long over all. Net weight, 3 ounces.

Price, per set of three shapes.....(YULUC) $1.05

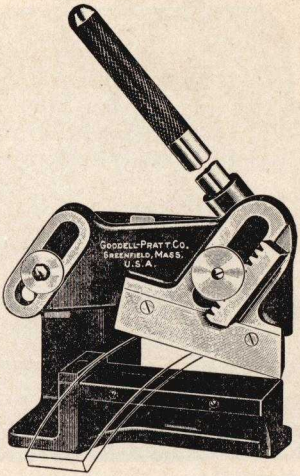
Packed one set in a carton, $13\frac{3}{4}$ x $2\frac{3}{4}$ x $1\frac{1}{4}$ inches.

Weight, $\frac{5}{8}$ pound.

Brake Lining Cutter

No. 739

Not designed for cutting iron or steel



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This machine is designed to cut all widths and thicknesses of the toughest brake lining up to six inches in width by one-half inch thick. The long handle gives an unusually powerful leverage, which is transmitted to the upper blade by means of a rack and pinion and transformed into a shearing motion by means of two cams, insuring an easy, clean cut. The knurling on the handle gives an easy grip even when hands are greasy.

The construction is simple and rugged, insuring uninterrupted service. The blades are made of carefully hardened and tempered steel and are easily removable for sharpening. The cutter will also be found convenient for cutting belting, shim material, etc. Iron parts are attractively finished in red and black enamel and the exposed steel parts nicely polished.

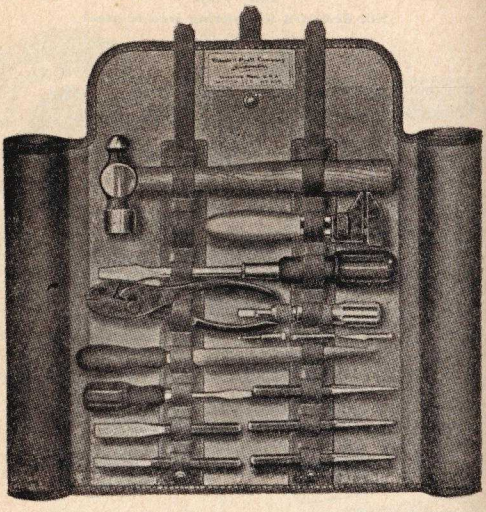
Net weight, 33 pounds.

Price, each..... (ZAVHA) $22.00

Packed one in a wooden case, $19\frac{1}{4}$ x $8\frac{3}{4}$ x 9 inches.

Shipping weight, 36 pounds.

No. 499 Motor Set



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This motor set contains 12 good tools in a strong, leather-bound canvas case, where they are held in place by strong leather straps. The tools are selected to make any ordinary road repairs on a small car. Every tool in the set is fully up to the highest standards, and can be depended upon in any emergency. This set will also be found exceedingly well adapted for motorcycle repairs and will easily pack into any motorcycle tool box. Net weight, 4 pounds.

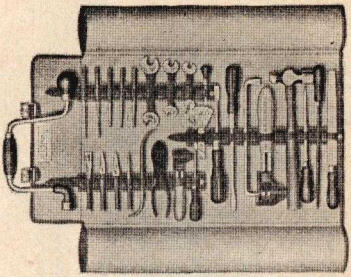
The following tools are included:

Screw-Driver Set	Center Punch
Combination Pliers	Adjustable Wrench
Cold Chisel, $\frac{3}{8}$-inch	Ball Peen Hammer
Cape Chisel, $\frac{1}{4}$-inch	Screw-Driver, 2-inch
Solid Punch	Screw-Driver, 5-inch
Prick Punch	Half Round File, 6-inch

Price, per set, complete.....(YOVED) **$10.00**

Packed one set in a carton, $12\frac{1}{2}$ x $4\frac{1}{2}$ x $3\frac{1}{2}$ inches. Weight, $4\frac{1}{4}$ pounds.

No. 599 Motor Set



Knowing that there is a demand among discriminating motorists for extra fine motor kits containing an assortment of high-grade tools, we have prepared these sets.

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This set contains 27 good tools for making all ordinary road repairs. They are all tools that will do good work and can be depended upon.

The tools are contained in an extra heavy leather-bound canvas roll, and are held in place by strong leather straps.

The following tools are included:

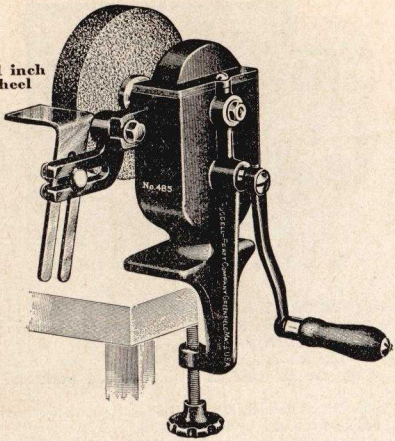
Rim Wrench, $\frac{3}{4}$-inch
Screw-Driver, Small
Thickness Gauge
Offset Screw-Driver
Heavy Screw-Driver, 4-inch
Combination Pliers
Pin Punch, $\frac{1}{8}$-inch
Pin Punch, $\frac{1}{4}$-inch
Cold Chisel, $\frac{1}{2}$-inch
Cape Chisel, $\frac{1}{4}$-inch
Half Round Chisel
Solid Punch
Cup Punch
Prick Punch
Center Punch
3 Double End Wrenches
Cotter Pin Puller
Adjustable Wrench, 6-inch
Adjustable Wrench, 10-inch
Ball Peen Hammer
Screw-Driver, 3-inch
Screw-Driver, 7-inch
Three-Square File, 6-inch
Flat File, 8-inch
Round File, 8-inch

Net weight, $11\frac{1}{4}$ pounds.

Price, per set, complete..... (YUPUG) $21.00

Packed one complete set in a carton, 16 x $9\frac{1}{2}$ x 4 inches.
Weight, 12 pounds.

No. 485 High Speed Bench Grinder



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This high speed and high power bench grinder will be greatly appreciated by all mechanics who desire to carry a serviceable but compact grinder in their tool chests. It is also a particularly handy grinder for household use.

A series of gears causes the wheel to make 22 revolutions to each turn of the crank. These gears are completely inclosed and are packed in grease in order that they may run silently and have proper lubrication.

A high grade abrasive wheel, 5 x 1 inch, is furnished with each. The wheels are particularly selected for sharpening edge tools. An adjustable work rest is provided.

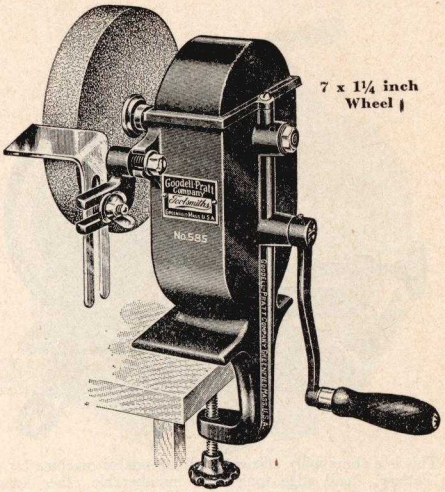
Finished in red and black enamel; $6\frac{1}{2}$ inches high above bench. Will clamp to any bench less than $2\frac{1}{4}$ inches thick. Net weight, 10 pounds, 10 ounces.

Price, each..... (YOSYG) $10.00

Packed one in a wooden case, $12\frac{1}{4}$ x $8\frac{3}{4}$ x 7 inches.

Shipping weight, 15 pounds.

No. 585 High Speed Bench Grinder



7 x 1¼ inch Wheel

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This high speed and high power bench grinder is very much larger and heavier than the one shown on the preceding page. It is particularly adapted for use in shops which are not provided with power, on an automobile service truck, or in a contractor's tool house.

A series of machine-cut gears causes the wheel to make 22 revolutions to each turn of the drop-forged steel crank. These gears are completely inclosed and packed in grease in order that they may run silently and have proper lubrication.

A high grade abrasive wheel, 7 x 1¼ inches, is furnished with each tool. The wheel is of a grain and grade particularly adapted for sharpening edge tools. An adjustable work rest is provided.

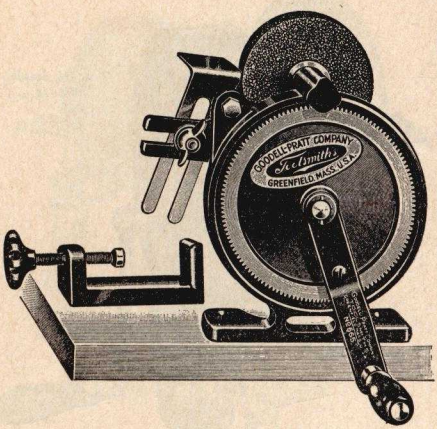
Finished in red and black enamel; 9¼ inches high above the bench. Will clamp to any bench less than 3 inches thick. Net weight, 22 pounds.

Price, each..... (YUNOD) $15.00

Packed one in a wooden case, 16 x 11½ x 9 inches.

Shipping weight, 30 pounds.

No. 665 Bench Grinder



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This is a thoroughly efficient and dependable machine for grinding cutlery, small edge tools, and innumerable other household grinding jobs.

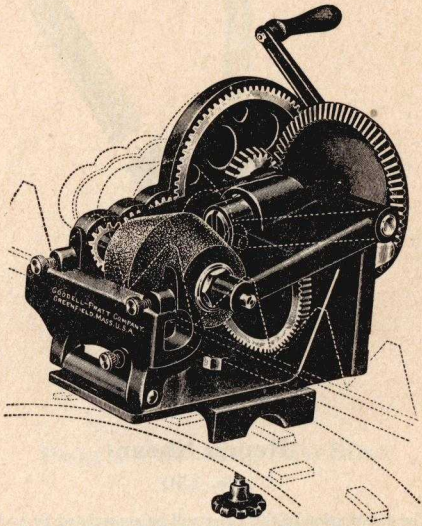
It has all the features desirable in a machine of this nature. The large solid gear is set deeply into the frame, giving as complete protection as though wholly inclosed. The wide machine-cut teeth insure smooth operation. The long steel crank, with its highly mahogany finished handle, insures power with comfort. The shafts are steel of ample diameter, running in long reamed bearings. The steel pinion is entirely inclosed and carries a medium grit abrasive wheel, 4 inches in diameter with $\frac{3}{4}$-inch face. The work rest is adjustable from two points. A clamp is furnished which will hold the grinder rigidly to any table or bench from $\frac{3}{4}$ to $2\frac{1}{8}$ inches thick. If preferred, the grinder can be screwed down.

The iron frame and clamp are finished in glossy black enamel and the large gear in red enamel. Height above bench, $9\frac{1}{4}$ inches. Gear ratio, 13 to 1. Net weight, $10\frac{1}{4}$ pounds.

Price, each... ..... (ZAGRA) $4.40

Packed one in a carton, $8\frac{3}{4}$ x $6\frac{7}{8}$ x $5\frac{7}{8}$ inches.
Weight, 11 pounds.

No. 158 Sickle Grinder



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A finely designed and constructed machine with newly designed holder for grinding mowing machine knives. The gears are all cut. Spindles are steel; bearings reamed, and the gears guarded.

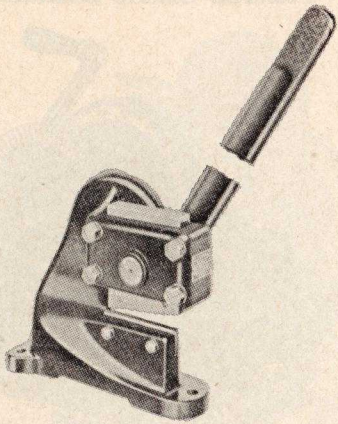
The adjustable bar holder can be stopped at any desired point. The wheel has an oscillating motion that can be thrown out at will. The machine will clamp to a bench or to a mowing machine wheel.

The high grade abrasive wheel furnished with this machine is $3\frac{1}{2}$ inches long, $3\frac{1}{2}$ inches in diameter at the center, beveled to $2\frac{3}{8}$ inches at each end.

All iron parts nicely finished in red and black enamel; steel parts are polished. Net weight, 26 pounds.

Price, each, with bevel wheel..... (YEFUG) $22.00

Packed one in a wooden case, 16 x $11\frac{1}{2}$ x 9 inches.
Shipping weight, 36 pounds.



Bench Shear

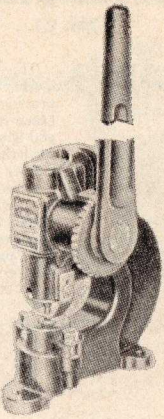
No. 150

The construction of this shear will be appreciated by every one having use for such a tool. The frame is so designed that sheets of any width can be readily cut. The lever is 20 inches long, and the tool steel blades have 4-inch cutting edges. All iron parts are finished in red and black enamel; steel parts are polished. Net weight, 31 pounds.

Although the opening is $\frac{9}{16}$ inch at the front, no iron or steel larger than $\frac{7}{16}$ inch round or flat should be cut. This machine will also be found useful for cutting brake lining. Not intended to cut tempered steel.

Price, each	(YEEVS)	$33.00
Extra blades, per set	..	6.60

Packed one in a wooden case, 24½ x 11 x 6 inches.
Shipping weight, 46 pounds.



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Bench Punching Machine

No. 140

This bench punch will be found an excellent machine for punching holes in thin sheet iron or steel. Each machine is provided with a handle, 24 inches long, and a $\frac{3}{8}$-inch round punch and die. The machine is well designed and carefully made. Iron parts are finished in red and black enamel; steel parts are polished. Depth of throat, 4 inches. Net weight, 54 pounds.

Holes up to $\frac{3}{8}$ inch can be readily punched in soft iron or steel $\frac{1}{8}$ inch thick, but no heavier work should be attempted.

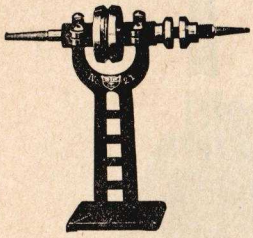
Price, each, with $\frac{3}{8}$-inch punch and die.....(YEDEB) $33.00

Extra punches and dies, $\frac{1}{8}$, $\frac{3}{16}$, $\frac{1}{4}$, or $\frac{5}{16}$ inch for round holes, per set of one punch and die of a size..... 4.40

Packed one in a wooden case, 26 x 12 x 6 inches.

Shipping weight, 72 pounds.

Polishing Head
No. 21



This little machine has a $\frac{3}{8}$-inch steel spindle, 8 inches long. It is provided with carefully threaded taper screws on each end. One end is also provided with flanges for holding a wheel $\frac{3}{4}$ inch thick. Screws and caps are of brass. The pulley is $1\frac{7}{8}$ inches in diameter, will take $\frac{1}{4}$-inch round or $\frac{3}{4}$-inch flat belt. Iron parts are finished in red and black enamel; steel parts, polished. Height, 7 inches. Net weight, $2\frac{1}{4}$ pounds.

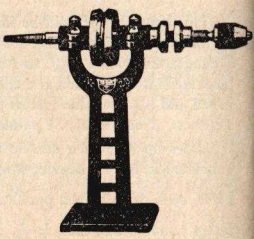
Price, each ..... (WYVAV) $2.70

Packed one in a carton, $9\frac{1}{2}$ x $7\frac{3}{8}$ x 3 inches.
Weight, $2\frac{1}{2}$ pounds.

Polishing Head
No. 23

Chuck Patented August 13, 1895

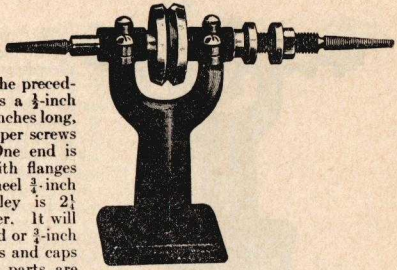
This little machine has a $\frac{3}{8}$-inch steel spindle, 8 inches long. It is provided with a taper screw on one end, and a three-jawed chuck, capacity 0 to $\frac{5}{32}$ inch, on the other. It also has flanges for holding a wheel $\frac{3}{4}$ inch thick. The pulley is $1\frac{7}{8}$ inches in diameter and will take $\frac{1}{4}$-inch round or $\frac{3}{4}$-inch flat belt. Iron parts are finished in red and black enamel; steel parts, polished. Height, 7 inches. Net weight, $2\frac{3}{8}$ pounds.



Price, each ..... (WYWOB) $3.20

Packed one in a carton, $9\frac{1}{2}$ x $7\frac{3}{8}$ x 3 inches.
Weight, $2\frac{3}{4}$ pounds.

Polishing Head
No. 22



This polishing head is somewhat larger and stronger than those shown on the preceding page. It has a $\frac{1}{2}$-inch steel spindle, 10 inches long, provided with taper screws on each end. One end is also provided with flanges for holding a wheel $\frac{3}{4}$-inch thick. The pulley is $2\frac{1}{4}$ inches in diameter. It will take $\frac{1}{4}$-inch round or $\frac{3}{4}$-inch flat belt. Screws and caps are brass. Iron parts are finished in red and black enamel; steel parts, polished. Height, 7 inches. Net weight, 4 pounds.

Price, each..... (WYVVA) $3.60

Packed one in a carton, $10\frac{3}{4} \times 7\frac{1}{2} \times 3\frac{1}{2}$ inches.
Weight, $4\frac{1}{2}$ pounds.

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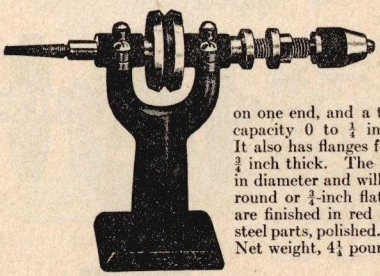
Polishing Head
No. 24

Chuck Patented August 13, 1895

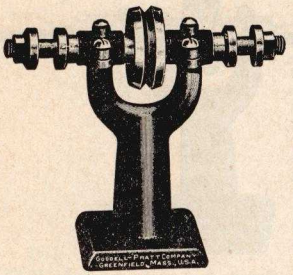


This machine has a $\frac{1}{2}$-inch steel spindle, 10 inches long, provided with a taper screw on one end, and a three-jawed chuck, capacity 0 to $\frac{1}{4}$ inch, on the other. It also has flanges for holding a wheel $\frac{3}{4}$ inch thick. The pulley is $2\frac{1}{4}$ inches in diameter and will take either $\frac{1}{4}$-inch round or $\frac{3}{4}$-inch flat belt. Iron parts are finished in red and black enamel; steel parts, polished. Height, 7 inches. Net weight, $4\frac{1}{4}$ pounds.

Price, each..... (WYZAZ) $4.50

Packed one in a carton, $10\frac{3}{4} \times 7\frac{1}{2} \times 3\frac{1}{2}$ inches.
Weight, $4\frac{3}{4}$ pounds.

Grinding Head
No. 25



This grinding head is similar to the machines on the preceding page, but it has a ½-inch spindle 7 inches long, provided with two sets of flanges for holding wheels ¾ inch thick. The pulley is 2¼ inches in diameter, and will take either ¼-inch round or ¾-inch flat belt. Screws and caps are brass. Iron parts are finished in red and black enamel; steel parts, polished. Height, 7 inches. Net weight, 4¼ pounds.

Price, each.....(WYZBE) $4.20

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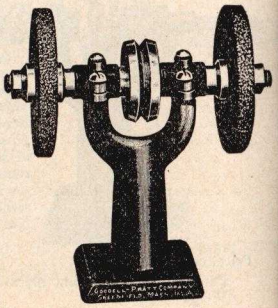
Packed one in a carton, 8½ x 7½ x 3½ inches.
Weight, 4¾ pounds.

Grinding Head
No. 25½

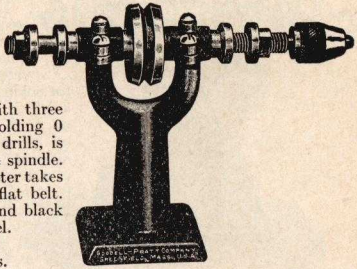
This machine is exactly the same as the No. 25 shown above, except that it is furnished with two high grade abrasive wheels, 4 inches in diameter, ½-inch face. These wheels are of different grades, suitable for such small work as they would naturally be used for. Height, 7 inches. Net weight, 4¾ pounds.



Price, each ... (WYZEB) $6.60

Packed one in a carton, 8½ x 7½ x 3½ inches.
Weight, 5½ pounds.

Grinding Head
No. 845



This machine has a ½-inch spindle fitted with two sets of flanges for holding wheels with ½-inch holes up to ¾ inch thick. A chuck with three hardened steel jaws, holding 0 to ¼ inch round shank drills, is fitted to one end of the spindle. Pulley 2½ inches in diameter takes ¼-inch round or ¾-inch flat belt. Nicely finished in red and black enamel and polished steel.

Height, 7 inches.

Net weight, 4¾ pounds.

Price, each..... (ZEMKY) $5.00

Packed one in a carton, 10¾ x 7½ x 3½ inches. Weight, 5¼ pounds.

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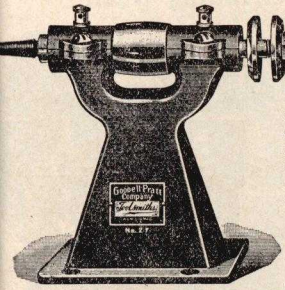
Polishing Head
No. 27



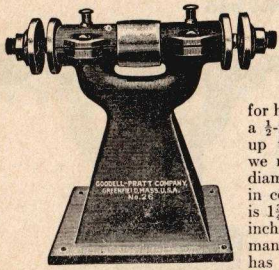
This machine has a ¾-inch steel spindle 11 inches long, provided with a taper screw on one end, and a three-jawed chuck, capacity 0 to ¼ inch, on the other. It also has flanges for holding a wheel 6 inches in diameter, ¾ inch thick, with a ½-inch hole. The pulley is 1¾ inches in diameter with a 1⅜-inch face for flat belt only.

This machine has adjustable boxes and oil cups. Iron parts are finished in black and red enamel; steel parts, polished. Height, 7 inches. Net weight, 9 pounds.

Price, each..... (WYZUF) $8.00

Packed one in a wooden case, 12½ x 9 x 7 inches.
Shipping weight, 12½ pounds.

No. 26 Grinding Head



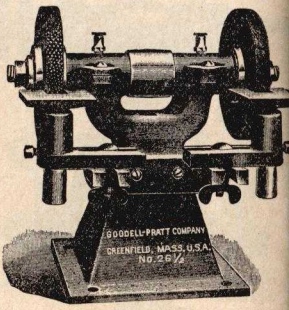
This machine is larger and heavier than those previously described. It has a ¾-inch spindle, 9 inches long, provided with two sets of flanges for holding wheels ¾ inch thick with a ½-inch hole. It will hold wheels up to 8 inches in diameter, but we recommend wheels 6 inches in diameter with a ½-inch face for use in connection with it. The pulley is 1¾ inches in diameter with a 1⅛-inch face for flat belts. Among many other features this machine has oil cups, case-hardened nuts, and a base designed for great rigidity. Iron parts finished in red and black enamel; steel parts, polished. Height, 7 inches. Net weight, 7 pounds.

PAGE 368 Price, each ..... (WYZIC) $6.60

Packed one in a wooden case, 12½ x 9 x 7 inches.
Shipping weight, 12½ pounds.

No. 26½ Grinding Head

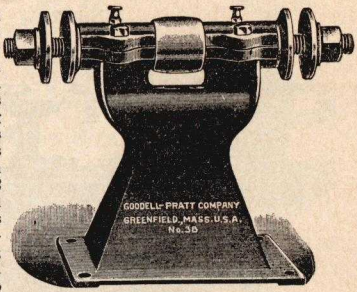
This machine is identical with the No. 26 shown above, except that it has the additional equipment of adjustable and detachable work rests, as shown in the illustration. These work rests add greatly to the usefulness of the machine without a large increase in cost. Work rests cannot be used with wheels larger than 6 inches by ½ inch. Height, 7 inches. Net weight, 9 pounds. No emery wheels are furnished.



Price, each ..... (WYZOD) $8.80

Packed one in a wooden case, 12½ x 9 x 7 inches.
Shipping weight, 14½ pounds.

No. 38 Grinding Head



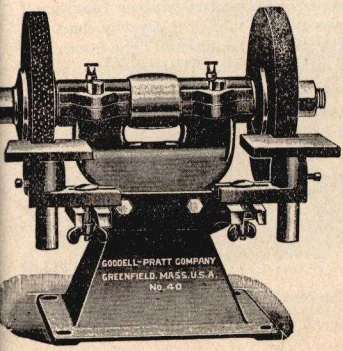
This machine is much larger and heavier than any of those previously shown. It has a 1-inch spindle, 12½ inches long, provided with two sets of flanges for holding wheels with ¾-inch holes of any size up to 8 inches in diameter and 1 inch thick. The pulley is 2 inches in diameter with a 1½-inch face. Boxes are adjustable; bearings are oiled by oil cups; nuts are case hardened. The base is designed to give the greatest possible rigidity. Iron parts are finished in red and black enamel; steel parts, polished. Height, 8 inches. Net weight, 21 pounds.

Price, each..... (YACZY) $13.25 PAGE 369

Packed one in a wooden case, 16 x 11½ x 9 inches.
Shipping weight, 26 pounds.

No. 40 Grinding Head

No Emery Wheels Furnished with This Machine



This machine is in every way identical with the No. 38 except that it is supplied with the additional equipment of adjustable and detachable work rests, as shown in the illustration, which add greatly to the usefulness of the machine. Height, 8 inches. Net weight, 25 pounds. No wheels are furnished.

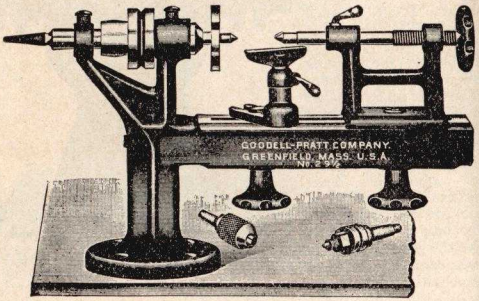
Price, each,
(YADOY) $16.50

Packed one in a wooden case, 16 x 11½ x 9 inches.

Shipping weight, 32 pounds.

Polishing Lathe

No. 29½



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A great variety of polishing and grinding can be done on this lathe that is not possible on the ordinary polishing or grinding head.

It is substantially constructed throughout. The bed is 12 inches long and is milled its entire length. The head stock has a spindle with a taper hole in both ends in which the regular equipment, consisting of a taper thread spindle, saw arbor, 0 to $\frac{5}{32}$ inch capacity chuck and slotted face plate, fit. The tail stock is adjustable for position and is equipped with screw feed and clamp lock. The tee rest is adjustable for position and height.

Extreme distance between centers is $3\frac{1}{2}$ inches. Swing, 5 inches. The pulley steps are 1 and $1\frac{1}{16}$ inches in diameter with $\frac{3}{4}$-inch face. Large step is grooved so round belt can be used if desired.

Frame, tail stock and tee rest nicely finished in red and black enamel. Steel parts are polished.

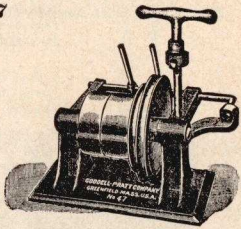
Weight, $9\frac{1}{2}$ pounds.

Price, each..... .....(YAADT) $13.00

Packed one in a wooden case, 14 x $9\frac{1}{2}$ x $5\frac{1}{2}$ inches.

Shipping weight, 14 pounds.

Countershaft
No. 47



This countershaft is designed to operate small machines driven by a round belt.

Shaft, ½-inch diameter.
Loose pulley, 3-inch diameter, 1-inch face.
Tight pulley, 3-inch diameter, 1½-inch face.
1st step, 3½-inch diameter.
2d step, 4½-inch diameter.
Base plate, 4 inches by 8 inches.
Net weight, 10¼ pounds.

Price, each.....(YAERK) $8.80

Packed one in a carton, 10 x 7½ x 7¼ inches.
Weight, 11¼ pounds.

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Countershaft
No. 48

This countershaft is similar to the one shown above, but has steps for ¾-inch flat instead of round belt.

Shaft, ½ inch.
Loose pulley, 3 inches by 1 inch.
Tight pulley, 3 inches by 1¼ inches.
1st step, 5 inches by 1 inch.
2d step, 6 inches by 1 inch.
Base plate, 9 inches by 5 inches.
Net weight, 12½ pounds.

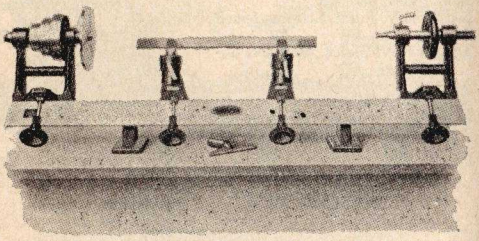
Price, each.....(YAEWF) $11.00

Each one packed in a wooden case, 11½ x 8½ x 8½ inches.
Shipping weight, 17 pounds.

No. 1230 Woodworking Lathe

Heavy Duty with Double Thrust and Radial Ball Bearing Spindle

Patent applied for



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A new ball bearing woodworking lathe built to meet the demand for a sturdy machine of large capacity for shop production or workshop use. The standard size has a capacity of 30 inches between centers and a swing of 13 inches, permitting a wide range of turning.

Extremely rugged design and construction has been used throughout. The bed is made of rolled steel with two faces 3 inches wide at right angles to each other and $\frac{5}{16}$ of an inch thick. This bed is solidly fixed to the two bench standards with the point of the angle upward (see end view). Some idea of the surprising rigidity of this bed can be grasped when one realizes that it takes a pressure of 5000 pounds applied at the center to deflect it $\frac{1}{16}$ of an inch. This force is so far in excess of any requirement on the lathe under maximum working conditions that the bed construction may safely be considered as absolutely rigid.

The head stock, T-rest standards, tail stock and clamp lugs all lock over the edges of the bed. When the hand screws are tightened there is a powerful wedging action that clamps the casting to the bed so firmly that it is held perfectly solid and vibrationless. This permits locking any fixture to any desired point on the bed.

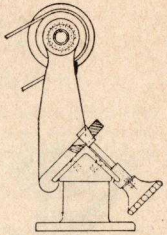
The live spindle is $\frac{7}{8}$ inch in diameter with a $\frac{23}{64}$-inch hole clear through it. It runs on two heavy ball bearings in the head stock. It carries the face plate which is $6\frac{3}{4}$ inches in diameter. Screw holes are provided in the face plate for affixing work. Both ends of the spindle have a No. 1 Morse Taper Socket so that chucks and accessories with these shanks can be used. The large spur center supplied fits this socket. The cone pulley has three steps, 3, 4 and 5 inches in diameter with $\frac{1}{8}$-inch face.

The tail stock has a 3½-inch screw feed operated by a well finished hand wheel 5½ inches in diameter. A positive screw and lever lock is also provided. The spindle also has a No. 1 M. T. socket to which the wood center is fitted.

Two T-rest standards are provided so that both the double and single rests can be used. The double rest is 12 inches long and the single 6 inches long.

This ball bearing lathe can be driven to its full capacity by any good ¼ Horse Power motor.

Length over all, 46 inches. Height of centers above bench, 11¼ inches. Weight, 65 pounds.



End view showing how head stock and other fixtures are clamped to bed.

Price, each, complete, 30 inches between centers..... (ZITEV) $36.00

Packed one in a wooden case, 48 x 15 x 11 inches. Shipping weight, 100 pounds.

Several larger capacities between centers are offered as follows:

Price, each, 36 inches between centers..... (ZITEZ) $39.00
Price, each, 42 inches between centers..... (ZITIB) 44.00
Price, each, 48 inches between centers..... (ZITIM) 49.00

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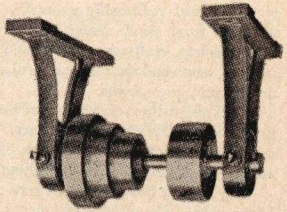
Ball Bearing Counter

No. 1231

This countershaft is made specially for use with the No. 1230 Lathe. It has two substantial hangers with heavy radial ball bearings. The cone pulley has three steps, 3, 4 and 5 inches in diameter, with 1¾-inch face. The driven pulley is 3⅞ inches in diameter with a 1½-inch face.

Width, 12 inches. Drop, 6½ inches.

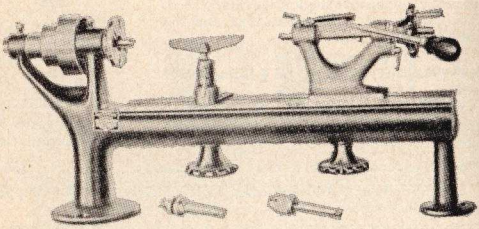


Price, each..... (ZITIS) $24.00

Packed one in a wooden case.

Bench Lathes

For Metal and Wood Working



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Thousands of these lathes have been installed in laboratories, cabinet shops, manual training departments, electrical servicing stations, garages and home workshops. Without exception they have rendered entire satisfaction even where the requirements demanded close performance.

They are moderate in price, yet they are thoroughly serviceable, practical, and reasonably accurate. They are substantially constructed from good materials and are designed especially for experimenters, craftsmen, and designers. They will handle a wide range of work, making them particularly useful in laboratories, repair shops, and trade schools.

The construction and fitting of these bench lathes are done with great care and reasonable accuracy. We do not claim to make a precision tool for the selling price of these lathes; but they can, and do, practically fill all the requirements of the average user.

The No. 121 Power Bench, shown on page 411, will fit the No. 125 Lathe only. The other attachments, shown on the following pages, will fit both No. 125 and No. 494 Lathes. Besides the attachments shown on pages 376 to 385, we can also recommend the scroll chucks, shown on page 154, for use in connection with these lathes.

Bench Lathe

No. 125

12 inches between Centers, 7-inch Swing

This lathe has a milled bed and a tail stock with a milled base. The live spindle has a cone bearing to take up wear, and is provided with a No. 1 Morse Taper socket and has a $\frac{3}{8}$-inch hole clear through. The tail stock has both screw and lever feed. Tail stock spindle has a No. 0 Morse Taper socket. The cone pulley has three steps, $1\frac{1}{2}$, $2\frac{1}{2}$, and $3\frac{1}{2}$ inches in diameter.

The lathe is finished with black and red enamel; the bed is milled; all working parts are polished.

Every lathe is provided with an adjustable tee rest, a slotted face plate, a saw arbor, and a drill chuck with a No. 1 Morse Taper shank. The chuck holds round shanks of all sizes from 0 to $\frac{1}{4}$ inch. Both the head stock and the tail stock are provided with point centers.

Length over all, 25 inches. Height, $11\frac{1}{2}$ inches. Swing, 7 inches. Extreme distance between centers, 12 inches. Net weight, 30 pounds.

PAGE 375

No countershaft is furnished with this machine.

Price, each..... (YEBWA) $36.00

Each lathe packed in a wooden case, 28 x 13 x $6\frac{1}{2}$ inches.

Shipping weight, 42 pounds.

Bench Lathe

No. 494

18 inches between Centers, 7-inch Swing

This lathe is the same as the No. 125 described above, but has a larger tee rest and a longer bed. The swing is the same.

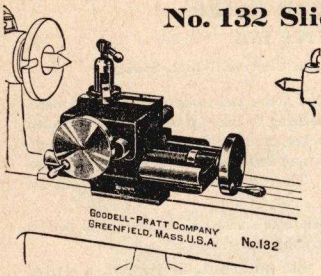
Length over all, 31 inches. Height, $11\frac{1}{2}$ inches. Swing, 7 inches. Extreme distance between centers, 18 inches. Net weight, 36 pounds.

Price, each..... (YOURD) $44.00

Each lathe packed in a wooden case, 34 x 13 x $6\frac{1}{2}$ inches.

Shipping weight, 50 pounds.

No. 132 Slide Rest



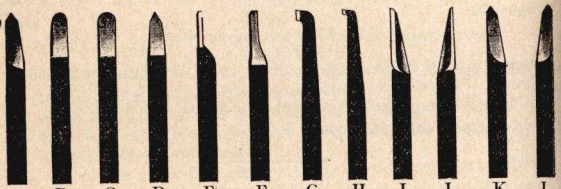
This slide rest is made especially for use with our bench lathes, and, with it, it is possible to do work of reasonable accuracy. It is a strong and thoroughly well made device although not a precision tool. It has a longitudinal motion of $3\frac{3}{8}$ inches and a cross motion of $2\frac{1}{4}$ inches. The tool post holds $\frac{1}{4}$ x $\frac{1}{4}$ inch lathe tools. Net weight, $6\frac{1}{2}$ pounds.

Price, each ..... (YECIB) $17.50

Packed one in a wooden case, 14 x $9\frac{1}{2}$ x $5\frac{1}{2}$ inches.
Shipping weight, 11 pounds.

No. 126 Lathe Tools

PAGE 376



These lathe tools are made especially for use with our No. 132 Slide Rest. The tools are about 3 inches long by $\frac{1}{4}$ inch square.

Price, per set of twelve ..... (YEBYE) $6.00
Price for separate tool ..... .50

Packed one set in a carton, $3\frac{1}{2}$ x $1\frac{3}{8}$ x 1 inch. Weight, $\frac{5}{8}$ pound.

No. 701 Sanding Disc

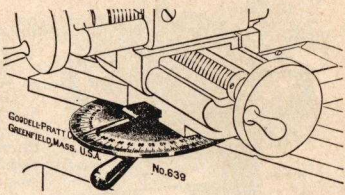
This disc, $6\frac{3}{4}$ inches in diameter, screws on to the live spindle of our bench lathes. Its grooved face gives a surface to which sandpaper and other abrasive sheets can be solidly glued. Net weight, $3\frac{3}{4}$ pounds.

Price, each ..... (ZAODS) $4.40

Packed one in a carton, $7\frac{1}{2}$ x $7\frac{1}{2}$ x $1\frac{1}{2}$ inches. Weight, $3\frac{1}{4}$ pounds.

No. 639 Protractor Attachment

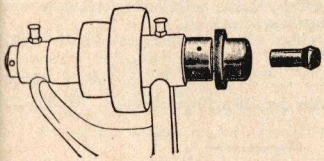
For use on the No. 132 Slide Rest to permit the operator to cut bevels and tapers at any desired angle. It is locked to the slide rest by means of the lever and the indicator reads from 0 to 90 degrees right and left. Net weight, 4 ounces.



Price, each..... (ZACPE) $5.00

Packed one in a carton, $3\frac{3}{4}$ x $3\frac{1}{2}$ x $2\frac{1}{4}$ inches. Weight, 6 ounces.

No. 129 Compression Chuck



Made for use with our bench lathes, and it will prove a very useful addition to it particularly for holding round rods to be machined.

PAGE 377

Each chuck consists of a collar, collet, and bushing. Bushings are furnished in the following sizes: $\frac{1}{8}$, $\frac{3}{16}$, $\frac{1}{4}$, $\frac{5}{16}$, and $\frac{3}{8}$ inch. No larger sizes can be used, but other intermediate sizes can be made to order at special prices.

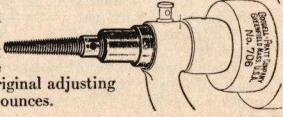
Price of chuck, with one bushing..... (YECCO) $10.00

Packed one in a carton, $2\frac{5}{8}$ x $2\frac{3}{8}$ x $2\frac{1}{4}$ inches. Weight, $\frac{3}{4}$ pound.

Extra bushings, regular sizes listed above, each..... $2.80

No. 706 Buffing Spindle

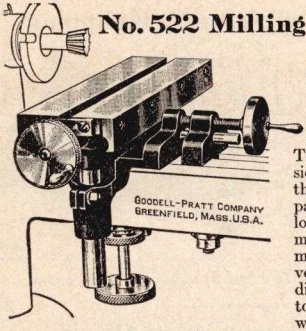
For operating wood centered polishing wheels, brushes, etc. It is easily installed by being screwed on to the end of the lathe spindle in place of the original adjusting and lock nut. Net weight, 4 ounces.



Price, each..... (ZAPCE) $3.30

Packed one in a carton. Weight, $\frac{3}{8}$ pound.

No. 522 Milling Attachment



This attachment enables the operator to do all kinds of small milling. It can be quickly clamped on to the lathe. The work is held by bolting to the T-slots on the top and one side of this fixture; or held in the vise, or centers, shown on page 387. The table is 7 inches long and has a 5-inch movement. The longitudinal movement is $1\frac{1}{2}$ inches, and the vertical, $1\frac{3}{4}$ inches. Extreme distance from spindle center to table, $2\frac{1}{16}$ inches. Hand wheels feed the table in any one of the three ways. The lathe spindle will hold any end milling cutters with a No. 1 Morse Taper shank; or the milling cutters on page 391 can be used by holding them in a chuck.

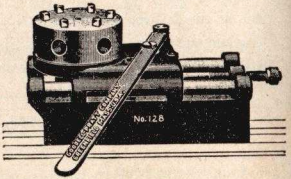
PAGE 378

No milling cutters furnished with this attachment. Net weight, $11\frac{1}{2}$ pounds.

Price of attachment only..... (YUCAN) $36.00

Packed one in a wooden case, 16 x $10\frac{5}{8}$ x $8\frac{3}{8}$ inches. Weight, 20 pounds.

No. 128 Turret Attachment



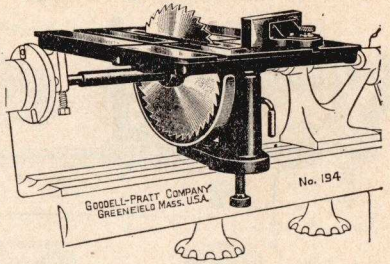
This attachment has a turret 3 inches in diameter, provided with six holes $\frac{1}{2}$ inch in diameter. It has a travel of $2\frac{5}{8}$ inches, but will shift and throw automatically only when cuts of $1\frac{1}{2}$ inches or less are made. Enables the operator to turn out small duplicate parts economically.

When turrets are furnished separately, the holes will be left undersized and the purchaser must rebore them on the lathe to which the turret is attached. Net weight, 9 pounds.

Price, each..... (YECAY) $40.00

Packed one in a box, 14 x $9\frac{3}{4}$ x $5\frac{1}{4}$ inches. Weight, $13\frac{1}{4}$ pounds.

No. 194 Sawing Attachment



This attachment consists of a solid base, which clamps to the bed of Nos. 125 and 494 Lathes, a table, $8\frac{3}{4}$ x $9\frac{1}{4}$ inches, and a special arbor which swings between the lathe centers and is driven from the live spindle. Two guides run in the slots in the table top. One guide is used for ripping and the other for cross cutting and mitering. Depth of cut is controlled by a screw in the base. A clamp screw is provided for locking the table at the desired point.

A circular saw 5 inches in diameter with a $\frac{3}{4}$-inch hole is recommended. It runs in a slot in a $1\frac{1}{4}$-inch wood insert in the machined top. This insert can be removed and a small dado head used if desired. The portion of the saw below the table is well guarded. Nicely finished throughout in red and black enamel and polished steel. Net weight, $10\frac{1}{4}$ pounds.

PAGE 379

Price, each, complete with arbor but no saw..... (YELIK) $17.50

Packed in a wooden case, $14\frac{1}{2}$ x $9\frac{1}{2}$ x $5\frac{1}{2}$ inches. Weight, 15 pounds.

No. 741 Fret Saw Attachment

This attachment is designed to fit the bed of our bench lathes and is driven from the lathe spindle by means of the slotted face plate.

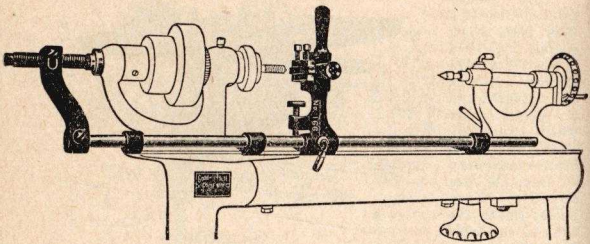
The table is $6\frac{3}{4}$ inches in diameter and can be tilted right or left and locked at any angle by means of the set screw at the back.

The saw has a $1\frac{1}{2}$-inch travel and the depth of throat is $8\frac{1}{2}$ inches. Designed for 6-inch loop end coping saw blades. No saws furnished. Net weight, $6\frac{1}{2}$ pounds.

Price, each..... (ZAVJE) $18.00

Packed in a wooden case, $12\frac{1}{4}$ x $8\frac{3}{4}$ x 7 inches. Weight, $9\frac{1}{2}$ pounds.

No. 166 Screw Cutting Attachment

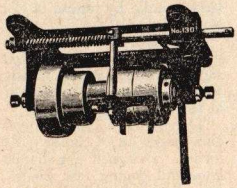


We can build screw cutting attachments for our bench lathes; they must, however, be ordered at the same time as the lathe, and fitted to it. They can be supplied with master screws for any lead, but 24 threads to the inch will be furnished unless otherwise specified. Shipping weight, 10 pounds.

PAGE 380

Price of attachment, with one master screw.....(YEGOG) $30.00
Extra master screws and nuts (regular threads), each..... 4.00

No. 130 Countershaft



This countershaft for use with our bench lathes is so arranged that a treadle can be attached to the pull. The belt is held on the tight pulley as long as pressure remains on the treadle. Diameter of tight and loose pulleys, $2\frac{3}{4}$ inches. Cone pulley has three steps, $1\frac{1}{2}$, $2\frac{1}{2}$, and $3\frac{1}{2}$ inches in diameter, $1\frac{1}{8}$ inches in width. Net weight, 10 pounds.

Price, each.....(YECEZ) $12.00

Packed one in a wooden case, $14\frac{1}{2}$ x 7 x $6\frac{1}{2}$ inches. Weight, 14 pounds.

Attachments for Bench Lathes

Lathe Dog No. 139

Capacity, $\frac{1}{16}$ to $\frac{1}{2}$ inch; $1\frac{1}{4}$ inches long, $\frac{5}{16}$ inch wide, and $\frac{1}{16}$ inch thick. Driving Pin, $\frac{1}{4}$ inch diameter, $1\frac{1}{4}$ inches long. Price, $1.00.

Square Center No. 137

Made of Tool Steel for light turning of wood or steel. Shank No. 1 Morse Taper. Price, $1.20.

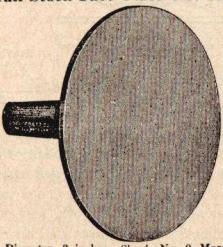
Wood Center No. 134

Diameter, $\frac{3}{4}$ inch, for use in Tail Stock. Shank No. 0 Morse Taper. Price, $1.00.

Spur Center No. 135

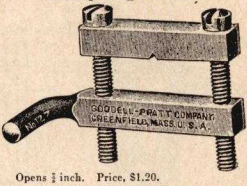
One inch in diameter for wood turning. Shank No. 1 Morse Taper. Price, $1.50.

Tail Stock Face Plate No. 133



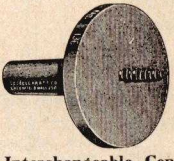
Diameter, 3 inches. Shank No 0 Morse Taper. Price, $1.50.

Clamp Dog No. 127



Opens $\frac{3}{4}$ inch. Price, $1.20.

Screw Center Face Plate No. 136



Diameter, $1\frac{1}{2}$ inches. Screw projects $\frac{1}{4}$ inch. Shank No. 1 Morse Taper.
Price, $1.50.

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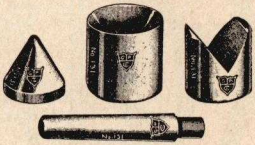
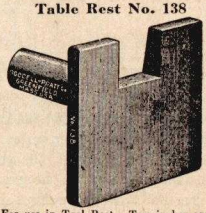
Interchangeable Centers and Shank No. 131



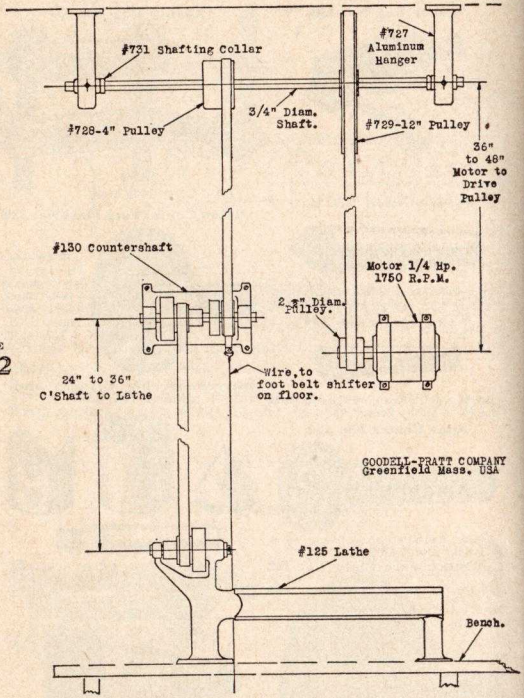
For use in Tail Stock. 1 Cone, 1 Cup, and 1 V Center, all $\frac{3}{4}$ inch outside diameter. One Shank No. 0 Morse Taper fitting all centers. Price, per set, $2.00.

Table Rest No. 138



For use in Tool Rest. Two inches square. Shank, $\frac{1}{4}$ inch. Price, each, $1.00.

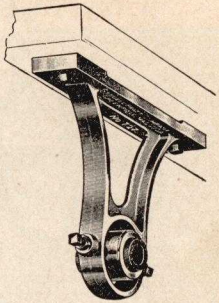
Typical Lathe Installation



Either the No. 125 or No. 494 Lathe can be driven to its capacity with any good $\frac{1}{4}$ Horse Power motor. As most motors of this size have a speed of 1750 R. P. M. the above diagram has been laid out with such a motor to give a lathe spindle speed for all round work, using the countershaft, hangers, pulleys and collars shown on pages 380 and 384.

Aluminum Shaft Hanger

No. 727



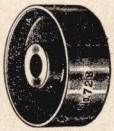
A cast aluminum, adjustable hanger with a 6½-inch drop fitted with an oilless bearing for ¾-inch shaft. Designed and ideal for a small shop line shaft for driving light machinery. Net weight, 2¼ pounds.

Price, each..... (ZATGA) $6.00

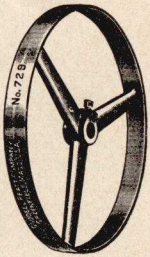
Packed one in a carton.
Weight, 2⅞ pounds.

Aluminum Pulleys

PAGE 383



These pulleys are cast aluminum, with machined hubs, bores, and crowned faces ready to assemble on ¾-inch shafting for driving light machinery.



	Diameter	Face	Price, Each
No. 728	3⅞ inches	1⅝ inches (ZATHE)	$3.00
No. 729	11½ inches	1⅛ inches (ZATIJ)	6.00

Packed one in a carton.
Weights, ⅞ and 2⅞ pounds.

Steel Shafting Collars

No. 731

A carefully machined collar to fit ¾-inch shafting, especially in connection with our No. 727 hangers. Headless set screw.

Price, each..... (ZATOK) $1.10

Packed one in a carton.

Weight, 4 ounces.

Pulleys

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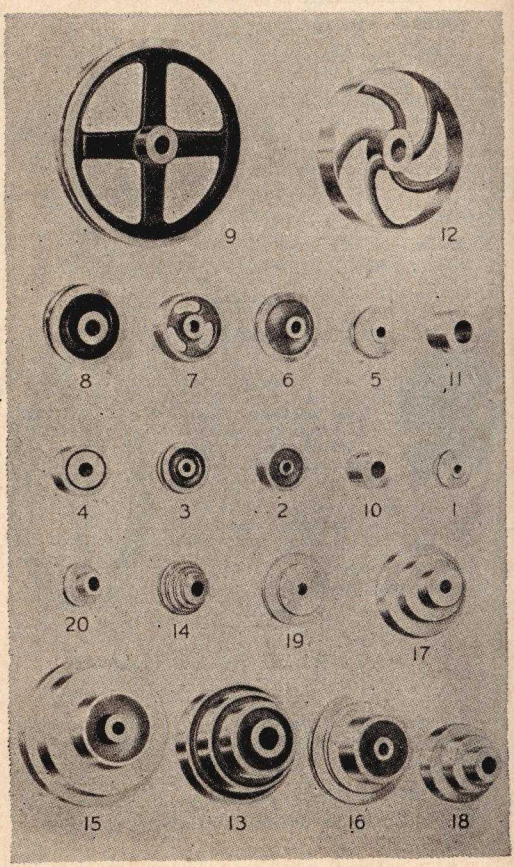

Dimensions and Specifications will be found on the following page

Pulleys

So many orders and inquiries have been received for the various pulleys which are regular equipment on our light power machines that it seemed advisable to list them in this catalog. They will be found most convenient in many installations. Photographs of these pulleys will be found on the opposite page, each numbered for identification.

Single Pulleys for Flat and Round Belt

Number	Diameter Inches	Face Inches	Bore Inches	Hub Inches	Belt	Price Each
1	$1\frac{7}{8}$	$\frac{11}{16}$	$\frac{3}{8}$	$\frac{7}{8}$	$\frac{3}{4}$ Flat or $\frac{1}{4}$ Round	$0.60
2	2	1	$\frac{3}{8}$	1	1 Flat	.80
3	$2\frac{1}{8}$	$\frac{3}{4}$	$\frac{3}{8}$	$\frac{3}{4}$	$\frac{3}{4}$ Flat or $\frac{1}{4}$ Round	1.00
4	2	$1\frac{1}{4}$	$\frac{1}{2}$	$1\frac{1}{4}$	$1\frac{1}{4}$ Flat	1.20
5	$2\frac{1}{8}$	$\frac{7}{8}$	$\frac{1}{2}$	$1\frac{1}{4}$	$\frac{3}{4}$ Flat or $\frac{1}{4}$ Round	.80
6	$2\frac{3}{4}$	$\frac{7}{16}$	$\frac{1}{2}$	1	$\frac{1}{4}$ Round	.80
7	$2\frac{3}{4}$	1	$\frac{1}{2}$	1	1 Flat	.80
8	$3\frac{1}{8}$	$1\frac{1}{4}$	$\frac{5}{8}$	$1\frac{5}{8}$	$1\frac{1}{4}$ Flat or $\frac{1}{4}$ Round	1.60
9	$8\frac{1}{4}$	$1\frac{1}{8}$	$\frac{5}{8}$	$1\frac{9}{16}$	$1\frac{1}{8}$ Flat or $\frac{1}{4}$ Round	3.90
10	$1\frac{3}{4}$	$1\frac{3}{8}$	$\frac{3}{4}$	$1\frac{3}{8}$	$1\frac{3}{8}$ Flat	1.20
11	2	$1\frac{3}{4}$	1	$1\frac{3}{4}$	$1\frac{3}{4}$ Flat	1.80
12	7	$1\frac{3}{8}$	1	$1\frac{3}{8}$	$1\frac{3}{8}$ Flat	4.00

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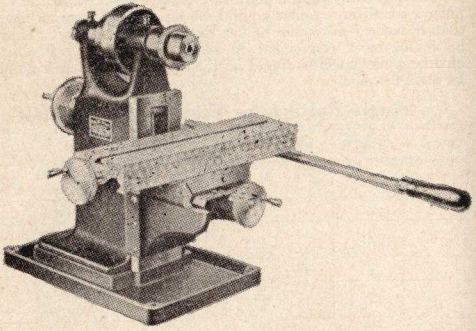
Cone Pulleys for Flat and Round Belt

Number	Number of Steps	Step Diameters Inches	Step Faces Inches*	Bore Inches	Width Inches	Price Each
13	3	3–4–5	$1\frac{1}{8}$–$1\frac{1}{8}$–$1\frac{1}{8}$	$\frac{7}{8}$	$3\frac{3}{4}$	$6.00
14	4	1–$1\frac{3}{8}$–$1\frac{3}{4}$–2	$\frac{1}{4}$R–$\frac{1}{4}$R–$\frac{1}{4}$R	$\frac{5}{8}$	$1\frac{1}{2}$	4.00
15	3	$2\frac{7}{8}$–5–6	$1\frac{1}{2}$–1–1	$\frac{1}{2}$	$3\frac{1}{4}$	5.00
16	3	$2\frac{7}{8}$–$3\frac{1}{2}$–$4\frac{1}{2}$	$1\frac{3}{8}$–$\frac{1}{4}$R–$\frac{1}{4}$R	$\frac{1}{2}$	$2\frac{3}{8}$	3.60
17	3	$1\frac{1}{2}$–$2\frac{1}{2}$–$3\frac{1}{2}$	$1\frac{1}{8}$–$1\frac{1}{8}$–$1\frac{1}{8}$	$\frac{1}{2}$	$3\frac{1}{4}$	3.00
18	3	$1\frac{1}{2}$–$2\frac{1}{2}$–$3\frac{1}{2}$	$1\frac{1}{8}$–$1\frac{1}{8}$–$1\frac{1}{8}$	$\frac{1}{2}$	$3\frac{1}{4}$	3.00
19	2	2–$2\frac{7}{8}$	$\frac{1}{4}$R–$\frac{1}{4}$R	$\frac{5}{8}$	$\frac{7}{8}$	2.20
20	2	1–$1\frac{3}{4}$	$\frac{3}{4}$–$\frac{3}{4}$ or $\frac{1}{4}$R	$\frac{9}{16}$	$1\frac{5}{8}$	1.40

* R indicates Round Belt.

No. 644 Bench Milling Machine



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This bench milling machine is designed to give compactness and solidity in a machine having a remarkably wide range of work at a price within reach of amateurs, experimenters, and every small shop.

This machine has a three step cone pulley, 1½, 2½, and 3½ inches in diameter, for 1-inch driving belt. The live spindle is ground to size and has a cone bearing to take up wear. Spindle has a No. 1 Morse Taper hole and the nose is threaded to take the compression chuck which is furnished with each machine.

The table is accurately machined 11½ x 3⅜ inches and can be fed three ways by hand wheels. It is provided with a ⅜-inch T-slot for fastening work to bed. Feed screw can be disconnected and a lever feed used for longitudinal travel. Feed screws on both top and cross slides have graduations for fine adjustment and are provided with means for taking up wear. Knee is elevated by a screw operated by hand wheel at the back of the frame. The ways to which the knee is fitted are a part of the frame. Provision is made to take up wear on all slides. The large bearing surfaces of all slides insure rigidity of the table. The machine is mounted in a cast iron bed or pan for holding oil and chips.

Longitudinal feed of table: With screw, 7 inches; with lever, 4½ inches.

Traverse feed, 2 inches. Vertical motion of knee, 7 inches. Height over all, 14 inches. Bench space required, 15½ x 21 inches without lever, 21 x 24 inches with lever. Bench space of pan or bed, 8 x 12 inches. Net weight, 51 pounds.

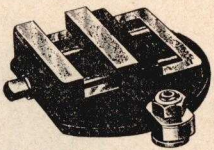
Maximum distance between center of spindle and table, 5¼ inches.

This machine is furnished complete with a compression chuck with ¾-inch bushing. No countershaft, arbor, vise, or centers are furnished but may be purchased separately.

Price ..... (ZADAP) $110.00

Packed in a wooden case, 20 x 16½ x 10 inches. Weight, 73 pounds.

Milling Machine Vises



No. 646. This vise has 2 x ⅜ inch jaws that open 1 inch. It is provided with clamps for fastening it to the table of the No. 522 Milling Attachment and No. 644 Milling Machine. Net weight, 1⅛ pounds.

Price of vise, complete with clamps.....(ZADOS) $5.50

Packed one in a carton, 4 x 4 x 1¼ inches. Weight, 1¼ pounds.

No. 659. This vise is the same as No. 646 described above, but is equipped with a swivel base graduated over an arc of 90 degrees. Net weight, 1½ pounds.

Price, each.....(ZAFTO) $15.00

Packed one in a carton, 5½ x 4⅜ x 1½ inches. Weight, 1½ pounds.

No. 648 Plain Index Centers

Readily clamped in position on the table of the No. 522 Milling Attachment or No. 644 Milling Machine, greatly increasing the range of work. The extreme distance between these centers on the No. 522 Attachment is 3 inches; on the No. 644 Milling Machine 5½ inches; the swing is 1½ inches. The index plate is provided with 36, 40, and 48 holes, making possible any indexing desired. Special index plates made to order. Net weight, 1⅛ pounds.

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Price, per set.....(ZADSO) $55.00

Packed one set in a carton, 6 x 4¾ x 3½ inches. Weight, 1⅜ pounds.

No. 649 Universal Index Centers

These centers make possible the accurate milling of tapers, in making small cutters, reamers, etc. They are exactly the same size as those described above, but the center head can be set at any angle from 0 to 90 degrees. The other center is adjustable for height. Net weight, 1½ pounds.

Price, per set.....(ZADUT) $100.00

Packed one set in a carton, 4¾ x 4¾ x 3½ inches. Weight, 1¾ pounds.

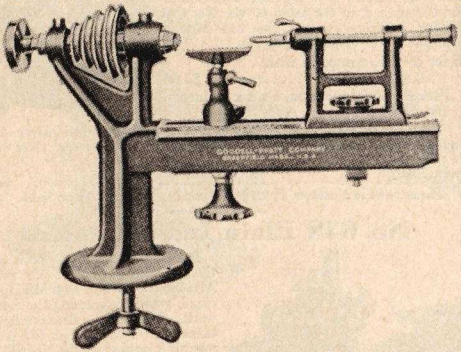
No. 669 Milling Machine Arbor

This arbor, fitted with a No. 1 M. T. shank to fit the spindle of No. 644 Milling Machine and No. 125 and No. 494 Lathes, is designed for cutters with a ½-inch hole. This arbor carries five collars of varying widths.

Price, each.....(ZAHWO) $10.00

Packed one in a carton. Weight, ⅝ pound.

No. 700 Precision Model Lathe



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Skilled mechanics, watchmakers, model makers, and experimenters who desire a lathe of moderate price that will handle small, delicate work will find that this machine fulfills their requirements. It is thoroughly practical in every way, and capable of all classes of work within its capacity, yet all unnecessary expense has been eliminated in its construction.

It is thoroughly well made, and in perfect alignment. The bed is carefully scraped by hand. All iron parts except the polished bearing surfaces are finished in black enamel; steel parts are polished.

The lathe has a 12-inch bed, an extreme distance between centers of $3\frac{1}{2}$ inches, and swings 5 inches. It is furnished complete with a draw-in spindle with a $\frac{3}{16}$-inch hole clear through. A hand rest and a tail stock are also provided. The pulley has four steps for $\frac{1}{4}$-inch round belt.

Height above bench, $8\frac{1}{4}$ inches. Net weight, $9\frac{3}{4}$ pounds.

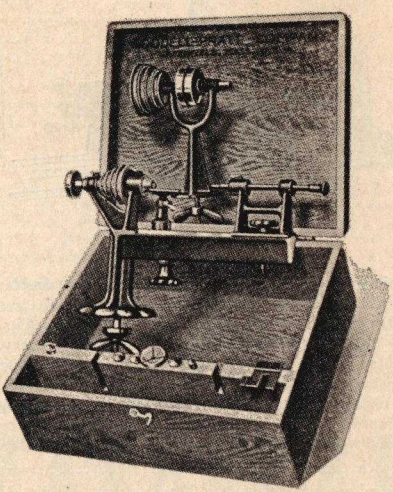
Price, each.....(ZANOD) $44.00

Packed one in a carton, $13\frac{3}{4}$ x $8\frac{3}{4}$ x $4\frac{1}{4}$ inches.

Weight, $10\frac{1}{2}$ pounds.

Attachments and accessories for use in connection with this lathe are shown on pages 390 to 395. We also recommend the No. 180 and No. $180\frac{1}{2}$ scroll chucks on page 154.

No. 1 Precision Model Lathe Assortment



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This set consists of 1 No. 700 Precision Model Lathe; 1 Fig. Z Countershaft; 1 Fig. G Table Rest; 1 Fig. D Saw Arbor (without saw); 1 Fig. V Step Chuck; 4 Fig. A Round Wire Chucks to hold $\frac{1}{16}$, $\frac{1}{8}$, $\frac{3}{16}$, and $\frac{1}{4}$ inch. The lathe and attachments are put up in a nicely finished hard wood case, as shown in the illustration.

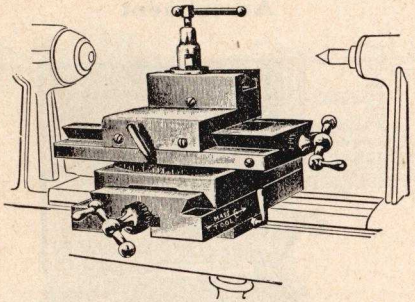
The attachments listed above are fully illustrated and described on the following pages.

Price, per set, complete in case..... (WYBFO) $72.00

Packed one in a carton, $14\frac{1}{2}$ x $11\frac{3}{4}$ x $5\frac{1}{2}$ inches.

Weight, 17 pounds.

No. 710 Compound Slide Rest



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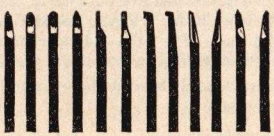
This compound slide rest is very precise and has a double micrometer adjustment, exceptionally wide bearing surfaces, is solid and perfectly adapted for all possible requirements of one of its size. It clamps directly to the lathe bed, being held firmly. It may be set to turn at any angle, the whole circle being graduated in degrees. Its tool post takes a lathe tool $\frac{5}{16}$ x $\frac{1}{2}$ inch. It has micrometer lead screw. Gibs are provided to take up all wear of the slides. Bearing surfaces are scraped to a perfect fit. It has $2\frac{1}{4}$-inch movement on bottom slides and ways; $2\frac{3}{4}$-inch cross feed; $2\frac{3}{4}$-inch longitudinal feed.

Price, each..... (ZAPOF) $85.00

Packed one in a carton, 10 x $6\frac{3}{8}$ x $3\frac{1}{2}$ inches. Weight, $3\frac{3}{4}$ pounds.

No. 714 Lathe Tools

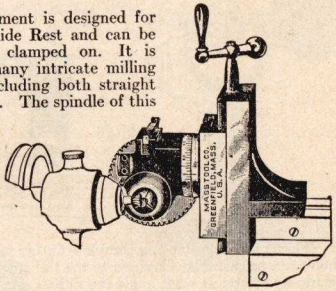
For use with No. 710 Slide Rest



No. 1 2 3 4 5 6 7 8 9 10 11 12

Price, each..... $0.50
Price, per set..... (ZAREF) 6.00

No. 715 Milling Attachment



This milling attachment is designed for use on our No. 710 Slide Rest and can be instantly and firmly clamped on. It is possible to perform many intricate milling operations with it, including both straight and bevel gear cutting. The spindle of this attachment will hold any of the regular chucks made for the No. 700 Lathe. The screw has a fine adjustment reading to .001 inch. The spindle swivels 90°. Each attachment is furnished with one 48-tooth index plate. Interchangeable index plates can be furnished to order.

Price of attachment, complete..... (ZARHO) $60.00

Packed one in a carton, $7\frac{1}{4}$ x $3\frac{3}{8}$ x $3\frac{1}{4}$ inches.

Weight, 2 pounds.

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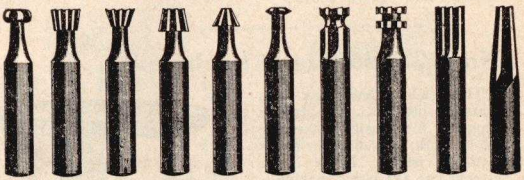
Milling Cutters

For use with No. 715 Attachment

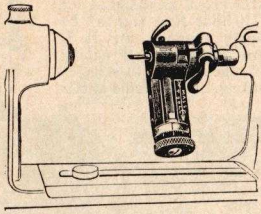


No. 20 21 22 23 24 25 26 27 28 29

These milling cutters are made of the best grade of cutter steel, properly tempered and capable of giving good service. They are made with $\frac{1}{4}$-inch round shanks to fit our No. 715 Milling Attachment, but they will be found extremely useful in any shop for use with other machines in doing many small special jobs.

Price, each..... $3.00

No. 720 Boring Attachment



This comprehensive and complete fixture for boring or truing small holes can be instantly clamped to the tail stock and is then ready for work, no matter at what angle the slide is set. The tool has a $\frac{3}{4}$-inch movement off center by turning the screw. It can also be set to bore the smallest hole with almost absolute trueness. The disc on the screw is graduated with a vernier to .000125. Gibs are provided to take up all wear on the slides.

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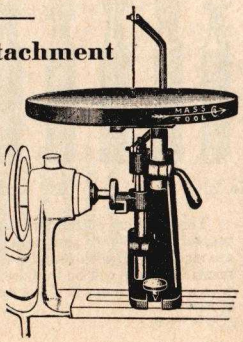
Price, complete with $\frac{3}{16}$-inch boring tool..... (ZASEG) $40.00

We also make $\frac{1}{16}$-inch and $\frac{1}{8}$-inch chucks for holding boring tools. The boring tools are made $\frac{1}{32}$ and $\frac{1}{16}$ inch to fit the $\frac{1}{16}$-inch chuck; and $\frac{3}{32}$ and $\frac{1}{8}$ inch fitting the $\frac{1}{8}$-inch chuck.

Chucks. Price, each..... $2.00
Boring Tools. Price, each..... 2.00

No. 725 Sawing Attachment



This useful attachment adds quite a little to the lathe's capacity for small pattern or model work, as well as for many intricate parts. It is easily attached to the lathe, making a well made and serviceable saw for light wood work.

The adjustable table is 4 inches in diameter. The saw frame holds 4-inch saws and has a 5-inch throat. Length of stroke, 1 inch.

We do not furnish saws for this attachment.

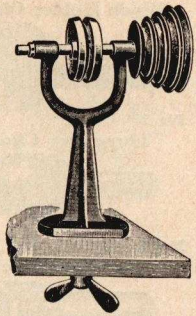
Price, each....., (ZASYL) $17.50

Countershaft

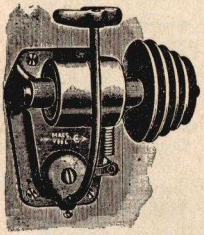
This countershaft is adapted for use when driving the No. 700 Lathe by foot power. It is also for power drive.

The cone pulley has four steps from 2 to 3 inches in diameter for ¼-inch round belt. The receiving pulley is 2¼ inches in diameter with a ½-inch face grooved so that either ¼-inch round or 1-inch flat belt may be used.

Fig. Z. Price, each.....(ZANUF) $9.00



Countershaft



This wall countershaft is designed for driving the No. 700 Lathe by steam or electric power. It is, however, solid and well made so that it can be used for any other small machine.

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The cone pulley has four steps 2 to 3 inches in diameter for ¼-inch round belt. The tight and loose pulleys are 2 inches by 1 inch for 1-inch flat belt.

Fig. PZ. Price, each..(ZANYG) $10.00

Round Wire Chuck

Regular Sizes

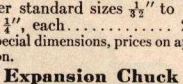
$\frac{1}{16}$, $\frac{3}{32}$, $\frac{1}{8}$, $\frac{5}{32}$, $\frac{3}{16}$, $\frac{7}{32}$, $\frac{1}{4}$ inch; .5, 1, 1.5, 2, 2.5, 3.5, 4.5, 5, 6 mm. Metric. 5, 10, 15, 20, 25, 30, 35, 40, 45, 50, 55, 60, Twist Drill Sizes.

Fig. A. Each.....$1.60

Other standard sizes $\frac{3}{32}$" to $\frac{1}{4}$", each..... 2.20

Special dimensions, prices on application.

Expansion Chuck



5 Sizes

$\frac{1}{4}$", $\frac{5}{16}$", $\frac{3}{8}$", $\frac{7}{16}$", $\frac{1}{2}$"

Fig. B. Each.....$2.70

Square Wire Chuck

5 Sizes

$\frac{1}{16}$", $\frac{3}{32}$", $\frac{1}{8}$", $\frac{5}{32}$", $\frac{3}{16}$"

Fig. O. Each.....$2.25

Right Angle Chuck

5 Sizes

$\frac{1}{16}$", $\frac{3}{32}$", $\frac{1}{8}$", $\frac{5}{32}$", $\frac{3}{16}$"

Fig. N. Each.....$2.25

Block Holder Chuck

Fig. X. Each.....$5.00

Three Jaw Chuck

0—$\frac{5}{32}$″ Capacity
Fig. C. Each.....$4.50

Shoulder Chucks

Fig. H. $\frac{3}{8}$″, each..... $2.50
Fig. P. Special sizes to order..... 3.00

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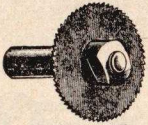
Saw Arbor



Diameter, $\frac{1}{8}$″
Fig. D. Each..... $1.75

Saws

Thickness, .021, .032, or .050.
Hole, $\frac{1}{8}$″.
Diameter, $\frac{7}{8}$″, each..... $0.75

V-Center for Tail Stock

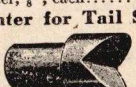


Fig. K. Price, each..... $1.25

Tail Stock Center

Fig. W. Price, each.....$1.00

Center Face Plate

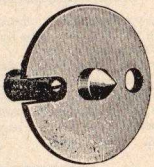


Fig. F. $1\frac{1}{4}$″. Price, each.. $5.00

Step Chucks

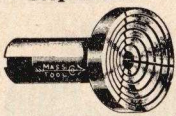


Fig. V. $1\frac{1}{4}$″ diam., each. $5.00
Fig. Q. $1\frac{1}{2}$″ diam., each. 3.50

Cement Chucks

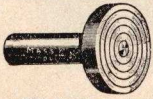


Fig. I. $\frac{1}{2}$″ diam., each.. $1.00
Fig. J. $\frac{3}{4}$″ diam., each.. 1.50

Center Holder

For live spindle
Fig. E. Each..... $2.25

Screw Center Face Plate

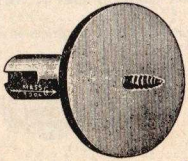


Fig. Y. Price, each..... $4.00

Clamp Face Plate

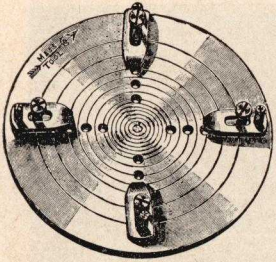


Fig. U. 4″. Price, each. $10.00

Screw Face Plate

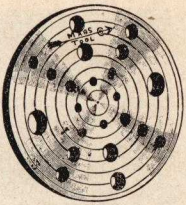


Fig. L. 2″. Price, each.. $7.00
Fig. S. 4″. Price, each.. 10.00

Slotted Face Plate

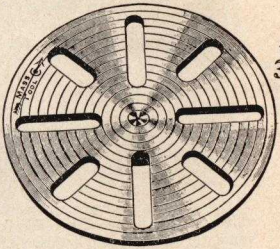


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Fig. T. 4″. Price, each. $10.00

Lead Lap

Fig. M. Price, each.... $3.50

Table Rest

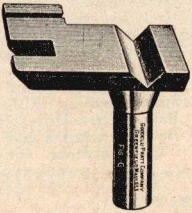

Fig. G. Price, each..... $4.50

V-Slot Clamp Plate

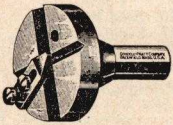

Fig. R. 1¼″. Price, each. $4.00

No. 710 Tool Set

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This set contains an assortment of high-grade tools of exceptional value in the home, the office, or the workshop. They are conveniently arranged in a handsome hard wood case.

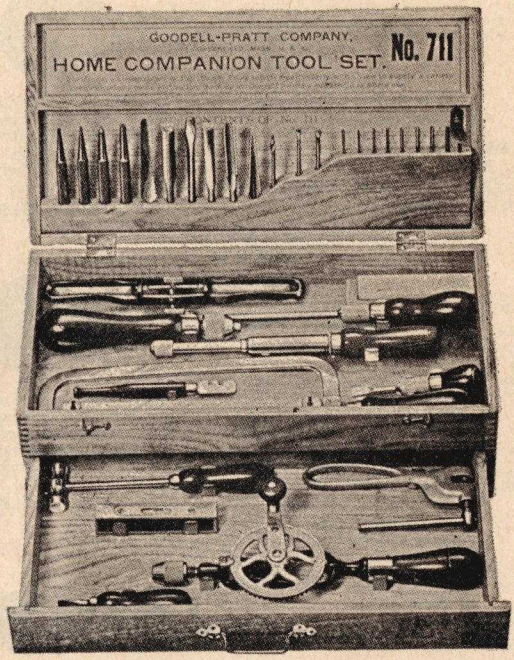
No.		No.	
2	Automatic Drill	13	Tool Handle for Holding:
	8 Drill Points, $\frac{1}{16}$ to $\frac{11}{64}$ inch		2 Chisels
3	Glass Cutter		2 Brad Awls
8	Hack Saw Frame		1 Gouge
	6 Coarse Hack Saw Blades		1 Screw-Driver
	3 Fine Hack Saw Blades		1 Gimlet
	2 Extra Fine Hack Saw Blades		1 Reamer
	1 Polished Bone Saw		1 Saw
36	Spoke Shave	996	Solid Punch
66	Ratchet Screw-Driver, $1\frac{1}{2}$ inch	997	Saddlers' Punch
66	Ratchet Screw-Driver, 6 inch	998	Prick Punch
	Small Oil Stone	999	Nail Set

Size of case, 16 x $8\frac{1}{4}$ x $3\frac{1}{4}$ inches. Net weight, 6 pounds.

Price, each..... (ZAPUG) $13.75

Each set packed in a carton, $16\frac{3}{4}$ x $8\frac{3}{4}$ x $3\frac{1}{2}$ inches. Weight, 7 pounds.

No. 711 Tool Set



This set is the same as No. 710, with the addition of a drawer holding this additional equipment:

No. 4½ Hand Drill — No. 92 Brass Hammer
No. 200 Metal Punch — No. 503 Iron Level
No. 33 Gunsmith's Screw-Driver

Size of case, 16 x 8½ x 5½ inches. Net weight, 10½ pounds.
Price, per set, complete..... (ZAPYH) $22.00
Each set packed in a carton. Weight, 11½ pounds.

No. 340 Ice Pick

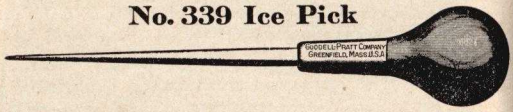
With Indestructible Aluminum Handle

This is an all-metal pick, made with a cast aluminum handle with a raised polished band running around it. The weight is just right so that the handle can be used for easily cracking ice and still not too heavy for ordinary chipping. The blade is $4\frac{1}{4}$ inches long and is forged from tool steel and is carefully hardened, tempered, and nicely polished. Length, 7 inches. Weight, 4 ounces.

Price, per dozen..... (YISAW) $4.80

Packed one half dozen in a carton. Weight, $1\frac{7}{8}$ pounds.

No. 339 Ice Pick



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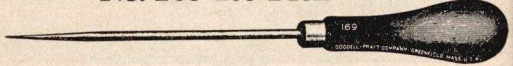
This is a strong, well made ice pick that will stand a great deal of hard service. The handle is large so that it may be used for cracking ice. The blade is hammer forged from tool steel, carefully hardened, tempered, and polished. The handle is hard wood, mahogany finish, $1\frac{3}{4}$ inches in diameter. It is protected by a heavy steel ferrule.

Blade, $5\frac{1}{2}$ inches long; overall, 9 inches. Weight, 3 ounces.

Price, per dozen..... (YIRZY) $4.80

Packed one half dozen in a carton, $9\frac{1}{4}$ x $5\frac{1}{4}$ x 2 inches. Weight, $1\frac{3}{8}$ pounds.

No. 169 Ice Pick



This is a long, thin ice pick of the style generally preferred by ice men. It has a good steel blade, well tapered, tempered, and polished. The handle is made of hard wood, enameled to render it as near moisture-proof as possible, and protected by a nickel plated ferrule.

Blade, 6 inches long; overall, 10 inches. Weight, 2 ounces.

Price, per dozen..... (YEHAD) $2.20

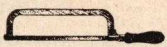
Packed one dozen in a carton, $10\frac{1}{2}$ x 4 x $2\frac{3}{4}$ inches. Weight, $1\frac{1}{2}$ pounds.

Sundry Tools

At different times in the past we have been prevailed upon to bring out tools for more or less specialized operations, the demand for which is of a sectional or local character. With our line constantly growing, however, we do not feel justified in devoting as much space to these items as heretofore. More complete descriptions will be gladly furnished on request.

Solid Hack-Saw Frames

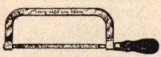
Made of solid steel, natural finish, with mahogany lacquered hard wood handles. Proper tension on the blade obtained by turning the handle. Blade can be faced four ways. Depth of throat, 2½ inches. No blades furnished.



		Price, Each
No. 9. For 9-inch blade	(WYICF)	$1.00
No. 11. For 11-inch blade	(WYKEL)	1.10

No. 64B Hack-Saw Frame

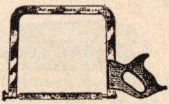
A heavy frame made of ¼ x ¾ inch steel with black finish and mahogany lacquered hard wood handle. Blade tension secured by turning handle. Blade can be faced four ways. Throat, 3½ inches. One blade furnished with each frame.



		Price, Each	
No. 64B. For 8-inch blade	(YAJIC)	$1.50	PAGE 399

No. 244 Heavy Hack-Saw Frame

This is a heavy frame made of ¼ x 1 inch steel with a comfortable handle. Throat is 9 inches for cutting rails, structural shapes and other large work. Full nickel finish.



		Price, Each
No. 244. For 10-inch blades	(YEZAV)	$3.50

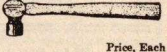
Heavy Hack-Saw Frames

These are heavy two-man saws for cutting rails, structural shapes, and other heavy work. Made of ¼ x 1 inch steel with 10½-inch throat. Made with black finish only. One blade furnished with each frame.

		Price, Each
No. 238B. For 14-inch blade	(YEYEV)	$3.80
No. 239B. For 17-inch blade	(YEYJL)	4.20

Machinists' Hammers

Heads forged from high grade steel, carefully tempered. Hung on straight grained hickory handles. Ball peen and face nicely polished.



	Weight of Head	Length		Price, Each
No. 557.	12 ounces	9½ inches	(YUIGT)	$1.25
No. 559.	16 ounces	12 inches	(YUJAT)	1.50

Combination Pliers

Drop-forged steel of fine quality correctly hardened and tempered. Made in 6½-inch size only. Each pair has slip joint, cutting slot, and pipe grip. Handles are scored and one has screwdriver end.

			Price, Each
No. 376.	Black Finish	(YOCAJ)	$0.60
No. 377.	Full Nickel Finish	(YOCEK)	.80

Greenfield Drill Chucks

These are the same as the Greenfield drill chucks on page 159, but fitted with taper square shanks that can be held in any two-jawed chuck. Has three hardened steel jaws for holding round shank drills.

	Capacity		Price, Each
No. 1501B.	0 to $\frac{5}{32}$ inch	(ZIYMP)	$2.00
No. 1502B.	0 to $\frac{1}{4}$ inch	(ZIYUZ)	2.60
No. 1503B.	0 to $\frac{3}{8}$ inch	(ZIZOZ)	3.20
No. 1504B.	0 to $\frac{1}{2}$ inch	(ZOZZO)	4.20

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No. 17 Chuck for Square Shanks

An all-steel chuck with two hardened jaws for square shank drills. It is fitted with either $\frac{1}{8}$ or $\frac{1}{4}$ inch round shanks as specified. Useful for using square shank drills in machines with round sockets or three-jawed chucks.

No. 17. Price, each ..... (WYSTE) $2.20

No. 179 Odd Jobs Chuck

Holds almost any shape within its capacity. Diameter, 5¼ inches; thickness, 1 inch. Four studs with hardened set screws fit accurately into five rows of holes. Back recessed to fit 3-inch face plate and drilled and tapped for fitting. Set screws furnished. Weight, 4⅞ pounds.

No. 179. Price, each ..... (YEJAF) $8.00

No. 105 Automatic Drill

Of simpler construction than our other automatic drills. A thoroughly practical tool, which represents a big drill value. Steel spiral, brass center nut, with nicely polished handle. Eight fluted drill points, $\frac{1}{16}$ to $\frac{1}{64}$ inch in diameter, furnished. Length, 13 inches.

No. 105. Price, each ..... (YAYLJ) $1.50

No. 1 Automatic Drill

Same fine construction as our other automatic drills with a ribbed brass handle. Eight fluted drill points, $\frac{1}{16}$ to $\frac{1}{4}$ inch in diameter, furnished with each tool. Beautifully polished and nickel plated.

No. 1. Price, each..... (WYAXY) $1.70

No. 2 Automatic Drill

Same as above, but with a finely finished rosewood handle. Eight fluted drill points, $\frac{1}{16}$ to $\frac{11}{64}$ inch in diameter, furnished with each drill. Full nickel finish.

No. 2. Price, each..... (WYCAC) $1.80

No. 3 Automatic Drill

Same as above, but with a metal magazine handle in which there are eight numbered compartments holding eight fluted drill points $\frac{1}{16}$ to $\frac{11}{64}$ inch in diameter. Drill points removed through hole in the rotating cap. Full nickel finish.

No. 3. Price, each..... (WYDHO) $2.00

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No. 656 Sensitive Drill

Drills holes 0 to $\frac{1}{4}$ inch in diameter very rapidly. Same operating mechanism as No. 0 on page 252. Length over all, $14\frac{1}{4}$ inches. Mahogany finished handle.

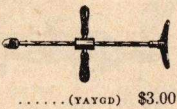
No. 656. Price, each..... (ZAEWK) $2.00

No. 102 Reciprocating Drill

Similar to above, but with chuck holding 0 to $\frac{5}{32}$ inch round shank drills and a nickel-plated magazine handle with eight numbered compartments. Eight drill points, $\frac{1}{16}$ to $\frac{11}{64}$ inch in diameter, in handle. Drills removed through hole in rotating cap.

No. 102. Price, each..... (YAYAP) $2.50

No. 103 Reciprocating Breast Drill



Similar to our other reciprocating drills, with three-jawed chuck for holding 0 to $\frac{1}{4}$ inch round shank drills. Traveling head has two mahogany finished handles. Comfortably shaped breast plate. Nicely finished.

No. 103. Price, each..... (YAYGD) $3.00

No. 110 Hand Drill

Made with black enameled malleable frame, steel pinion, machine-cut gears and white nickeled, hollow brass handle which can be used for holding drills. Chuck has two jaws for holding fluted shank drill points eight of which, $\frac{1}{16}$ to $\frac{1}{4}$ inch in diameter, are furnished.

No. 110. Price, each..... (YAYUT) $2.00

No. 4 Hand Drill

Black enameled malleable iron frame, steel pinion, machine-cut gears and a bright nickeled magazine handle with eight numbered compartments in which are packed eight drill points, $\frac{1}{16}$ to $\frac{1}{4}$ inch in diameter. Large gear red enameled. Chuck is steel with three hardened jaws holding round shank drills 0 to $\frac{5}{32}$ inch in diameter.

No. 4. Price, each..... (WYFAF) $2.40

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No. 52 Hand Drill

A fine steel frame drill with steel chuck having three hardened jaws holding 0 to $\frac{5}{32}$ inch round shank drills. Two steel pinions. Large gear finished in red enamel. Gears machine cut. Hollow rosewood handle with screw cap. Length, $10\frac{1}{4}$ inches.

No. 52. Price, each..... (YAFZO) $2.80

No. 329 Hand Drill

Similar to above, but with capacity for 0 to $\frac{1}{4}$ inch round shank drills. Chuck has three hardened steel jaws. Two steel pinions. Frame nickel plated. End handle solid, mahogany finished hard wood. Length, $11\frac{1}{2}$ inches.

No. 329. Price, each..... (YIMYT) $3.00

No. 07 Breast Drill

Same as No. 6 on page 271, but with an all-steel chuck with two hardened forged steel jaws for holding square shank drills. Two speeds. Black enameled malleable iron frame. Steel pinions. Gears machine cut. Large gear red enameled. Length, $16\frac{1}{2}$ inches.

No. 07. Price, each..... (WYHAH) $4.50

No. 473 Breast Drill

Same as No. 219 on page 280, with the addition of a small level set in the steel shank to start holes horizontally. Two speeds. Steel pinions. Machine-cut gears. Large gear red enameled. Chuck is steel with two forged steel jaws for holding square shank drills. Length, 16¾ inches.

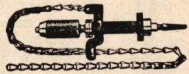
No. 473. Price, each..... (YORIB) $4.20

No. 0316 Chain Drill

Fitted with a chuck with three hardened steel jaws holding 0 to ½ inch round shank drills. Ball-bearing spindle has hardened square shank to fit bit-brace chuck. Hand feed controlled by turning large knurled collar. Fitted with three feet of strong steel chain.

No. 0316. Price, each..... (YIKOP) $4.00

No. 0307 Chain Drill



Same as No. 0316 above, but with two-jawed chuck for holding square shank drills. Hand feed. Ball-bearing spindle. Three feet of steel chain.

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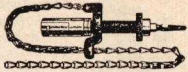
No. 0307. Price, each..... (YIJEL) $3.80

No. 0308 Chain Drill



Same as No. 0316 above, but with a socket and set screw for holding ½-inch round shanks only instead of a chuck. Hand feed. Ball-bearing spindle. Three feet of strong steel chain.

No. 0308. Price, each..... (YIJKA) $3.00

Giant Chain Drills

Similar to our other chain drills but for much heavier work. In place of chucks they have sockets for holding large size drills. Fitted with two 5-foot lengths of heavy steel chain. Hand feed.

			Price, Each
No. 317.	½-inch Round Socket.....	(YIKYR)	$6.50
No. 318.	No. 1 Morse Taper Socket.....	(YILAM)	7.50
No. 319.	No. 2 Morse Taper Socket.....	(YILEN)	7.50

No. 148 Bench Drill

A small lever feed drill with a chuck holding 0 to $\frac{5}{32}$ inch round shank drills. Spindle travels 1⅞ inches. Distance chuck to table, 3½ inches. Height over all, 11 inches. Eight drill points, $\frac{1}{16}$ to $\frac{1}{4}$ inch in diameter, supplied.

No. 148. Price, each..... (YEEMK) $5.70

No. 147 Bench Drill

This is the same drill head as above clamped to a No. 161 Vise (page 188), with jaws 2 inches wide opening 1½ inches. Drill can be readily removed from vise if desired.

No. 147. Price, each.... ....(YEELJ) $7.80

No. 145 Universal Bench Drill

A drill with many unique features with capacity for drilling holes from 0 to $\frac{3}{32}$ inch in diameter. Drill can be used in any position from vertical to horizontal. Table adjustable. Extreme distance from chuck to table, 7½ inches. Length over all, 12 inches. Lever feed. Cut gears. Drills to center of 2-inch circle. Finished in red and black enamel. Eight drill points, $\frac{1}{16}$ to $\frac{1}{64}$ inch in diameter, furnished.

No. 145. Price, each.....(YEEBY) $8.50

No. 146 Universal Bench Drill and Vise

This is a useful combination of the No. 145 Drill above and our No. 161 Vise, which has jaws 2 inches wide that open 1½ inches. Drill easily detached from vise when not needed. Chuck with three hardened jaws hold 0 to $\frac{3}{32}$ inch round shank drills. Eight drill points, $\frac{1}{16}$ to $\frac{1}{64}$ inch in diameter, furnished with each drill.

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No. 146. Price, each.....(YEEGD) $10.00

Bench Drills with Automatic Feed

Sturdy, well-built drills with 0 to $\frac{3}{8}$ inch capacity and sensitive automatic feed controlled by the knurled screw at the top of black enameled iron frame. Two easily changed speeds. Steel pinions. Machine-cut gears. Adjustable table. Chucks have three hardened steel jaws that hold 0 to $\frac{3}{8}$ inch round shank drills. Eight drill points, $\frac{1}{16}$ to $\frac{1}{64}$ inch in diameter, furnished with each drill. Vise has 2¼-inch jaws that open 2 inches. Height above table, 18 inches. Price, Each

No. 490. Without Vise.....(YOTID) $14.00
No. 490½. With Vise.....(YOTOF) 16.00

Wall Drilling Machines

This two-speed drill is fastened to the wall or a post with two strong brackets. The head and table are mounted on the 1½-inch steel tube running between the brackets, and their position is adjustable. Two easily changed speeds. Hand feed. Cut gears. Chuck has three hardened jaws holding 0 to ½ inch round shank drills. Vise has jaws 2¼ inches wide and opens 2 inches. Centers are steel. Iron parts red or black enameled, steel parts polished. Price, Each

No. 63. Without Vise or Centers.....(YAJAZ) $18.00
No. 63½. With Vise and Centers.....(YAJBE) 22.00

No. 491 Bench Drill

This drill is equipped with a sensitive automatic feed controlled by turning the knurled screw at the top of the frame. The drilling head is clamped to a 1¼-inch steel tube, which in turn is clamped to the bench. The table measuring 6 x 6½ inches is clamped to the column. Two easily changed speeds. Machine-cut gears. Iron parts finished in red and black enamel. Steel parts polished. Chuck has three hardened jaws for holding 0 to ½ inch round shank drills.

No. 491. Price, each.....(YOTUG) $25.00

Bench Drills

All working parts clamped to a 1¼-inch steel tube which in turn is clamped into the heavy base that has a 6 x 7 inch working face. Round table, 7 inches in diameter, held in adjustable bracket. Two speeds. Heavy balance wheel. Hand feed. Chuck has three hardened jaws holding 0 to ½ inch round shank drills. Vise interchangeable with round table has 2½-inch jaws that open 2½ inches. Nicely finished in red and black enamel and polished steel.

		Price, Each
No. 72.	With Round Table.....(YANAF)	$27.00
No. 72½.	With Vise (Illustrated).....(YANFA)	30.00

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Bench Drills with Swinging Arm

This is the same two-speed drilling head as used on No. 63 Drill above, pivoted to a swinging arm that turns on a heavy wall plate. Drills to center of a 54-inch circle. Two speeds. Machine-cut gears. Chuck has hardened jaws that hold 0 to ½ round shank drills. Nicely finished in red and black enamel and polished steel.

		Price, Each
No. 18.	With Hand Feed.....(WYTAT)	$21.00
No. 18A.	With Automatic Feed...(WYTEV)	24.00

No. 74 Clamp Drill

A fine drill for heavy repair work. Two speeds, cut gears, and hand feed. Fitted with a three-jawed chuck with 0 to ½ inch capacity. Tube, 24 inches long. Drills to center of 16-inch circle. Weight, 42 pounds.

No. 74. Price, each.....(YANLY) $28.00

No. 76 Clamp Drill

This tool is much larger and heavier than No. 74. Tube, 2 inches in diameter. Fitted with socket for holding ½-inch shank drills. Also supplied with chuck for holding drills 0 to ½ inch diameter. Length, 30 inches. Weight, 75 pounds.

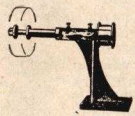
No. 76. Price, each.....(YAOPK) $40.00

No. 112 Clamp Drill

A ⅜-inch capacity drill with two speeds. Screw feed and ratchet attachment. Drilling head adjustable to many angles at different distances from standard. Both hand and chain clamp provided. Length over all, 34 inches. Weight, 33 pounds.

No. 112. Price, each.... .....(YAZTO) $28.00

No. 31 Offset Polishing Head



Built with a 1-inch spindle, 14 inches long, to operate 8-inch wheels, 1⅞ inch thick, with ¼-inch holes. Overhang very useful for many jobs. Adjustable bearing. Oil cups. Pulley diameter, 2½ inches; face, 1⅝ inches.

No. 31. Price, each.....(YAATL) $9.80

No. 43 Polishing Head

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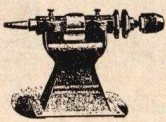
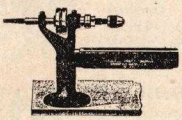


A sturdy bench machine with a ¾-inch spindle, 14½ inches long, with a taper thread for cloth and wood center wheels on one end and on the other a three-jawed chuck holding round pieces up to ⅜-inch diameter. Also has flanges for holding 8-inch wheels with 1½-inch face. Adjustable boxes. Oil cups. Pulley, 2 x 1½ inches. Nicely finished in red and black enamel and polished steel.

No. 43. Price, each.....(YAEBS) $12.80

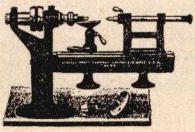
No. 28 Polishing Head



A lathe-type head with 8¾-inch bed to which special fixtures can be fastened for special work. The ½-inch spindle is 10 inches long and has a taper thread on one end and a chuck holding up to ¼ inch diameters on the other. Also has flanges for 4-inch wheels ⅞ inch wide. Pulley, 2¼ x ⅞ inch, for flat or ¼-inch round belt. Base black enameled.

No. 28. Price, each.....(WYZZA) $5.00

No. 29 Polishing Lathe



This is almost the same as No. 29½ on page 370, except that it does not have the taper thread on the spindle and the tail stock is not equipped with screw feed. Bed, 12 inches. Capacity between centers, 3½ inches. Swing, 5 inches. Iron parts finished in red and black enamel; steel parts polished.

No. 29. Price, each....(YAACS) $11.00

No. 115 Bench Grinder

Accurately machined gears and reamed bearings make this a smooth, easy-running grinder. Fitted with a high-grade abrasive wheel 4 inches in diameter with 1-inch face. Gear ratio: 22 to 1. Clamps to bench 2 inches thick or less. Nicely finished in red and black enamel and polished steel.

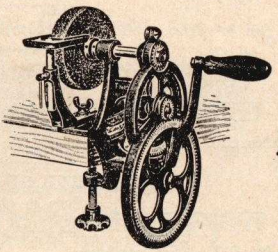
No. 115. Price, each.....(YEACY) $7.70

No. 142 Bench Grinder

Same as No. 115 above, with the addition of a three-jawed chuck on the spindle for holding drills or rods up to ¼ inch in diameter.

No. 142. Price, each.....(YEDUF) $8.80

No. 109 Bench Grinder



A specially fine machine for household and workshop use. Accurate, smooth running gears are completely guarded. Fitted with a 4-inch diameter wheel with 1-inch face of high quality for sharpening knives, shears, chisels and all kinds of edge tools. The adjustable work rest can be used on either side of the wheel. Wheel makes 22 revolutions to every turn of the handle. Nicely finished in red and black enamel and polished steel. Net weight, 10 pounds.

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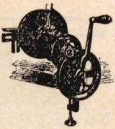
No. 109. Price, each.....(YAYSO) $7.00

No. 144 Bench Grinder

A heavier, more powerful machine fitted with a high-grade abrasive wheel 5 inches in diameter with a 1-inch face. Machine-cut gears. Reamed bearings. Height above bench, 10 inches. Well finished in red and black enamel and polished steel.

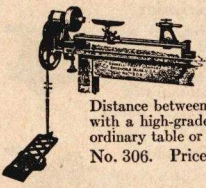
No. 144. Price, each.....(YEDZA) $12.00

No. 149 Bench Grinder



A fine, large, powerful machine carrying a 7-inch diameter high-grade abrasive wheel with a 1¼-inch face. Gear ratio is 20½ to 1. Work rest. Cut gears completely guarded. Spindle runs in an oil bath. Clamps to 4-inch bench or less. Height above bench, 19¾ inches. Nicely finished in red and black enamel and polished steel.

No. 149. Price, each.....(YEERP) $12.00



No. 306 Bench Grinder with Lathe Attachment

This grinder is similar to No. 109, with lathe bed 18 inches long and a treadle added. Spur center combined with wheel nut. Adjustable tailstock and tee rest provided. Distance between centers, 12 inches. Swing, 5 inches. Fitted with a high-grade abrasive wheel, 4 x 1 inch. Clamps to any ordinary table or bench. Weight, 29 pounds.

No. 306. Price, each, complete..... (YIHYP) $15.00

No. 3 Glass Cutter

The finely polished frame of this cutter carries two ground, honed and tested wheels. Handle is hard wood with a mahogany lacquer finish.

No. 3. Price, per dozen..... (WYDOH) $3.40

No. 216 Glass Cutter

A single wheel cutter with a nicely polished frame and a hard wood handle with a mahogany finish. Wheel is ground, honed and tested.

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No. 216. Price, per dozen..... (YEREP) $2.30

No. 217 Glass Cutter

Same as above, but with a red and black enameled iron handle with a ball end for tapping. Wheel is ground, honed and tested.

No. 217. Price, per dozen..... (YEROR) $2.00

No. 338 Glass Cutter

Has a comfortable red enameled iron handle with a polished head. Wheel is ground, honed and tested.

No. 338. Price, per dozen..... (YIRWO) $2.00

No. 555 Screw-Driver

Very similar to No. 111 on page 220. It automatically drives or draws or acts as a right or left hand ratchet or rigid screw-driver. Action controlled by turning knurled collar right or left or neutral. Accurately cut steel spiral. Durable bronze drive nuts. Three tempered tool steel blades furnished. Metal parts nicely polished or nickel plated. Handle hard wood with mahogany lacquer finish. Length extended, with blade, 18½ inches.

No. 555. Price, each..... (YUHZY) $2.40

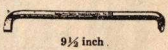
No. 32 Screw-Driver

A bench tool for rapidly driving small screws in assembling hardware, firearms, or parts of machines. Blades rotate in one direction continuously by moving the handle back and forth over the steel spiral.

No. 32. Price, each..... (YABOV) $4.80

No. 366 Offset Screw-Driver

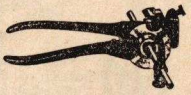
Forged from a high grade of ¼-inch round tool steel, carefully tempered, ground and the points nicely polished. Blades are at right angles to one another. Length over all, 9½ inches.



No. 366. Price, each..... (YOANT) $0.60

No. 527 Cutting-Off Tool

An efficient tool for cutting off any kind of round stock up to ½-inch diameter in a lathe. Set screw for setting the hardened guides to a running fit on the rod. Length gauge for cutting short pieces, pins, dowels, etc. Cutter made of hardened tool steel.



No. 527. Price, each..... (YUCUS) $3.00

PAGE 409

No. 51 Vise Drilling Attachment

Clamps into any but the smaller size vises, and can be used for many small drilling jobs. Handle-operated chuck of all-steel three-jawed construction. Holds drills up to $\frac{5}{32}$ inch in diameter.

No. 51. Price, each..... (YAFWE) $3.50

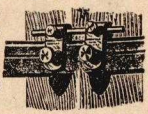
No. 50 Wire Threader

Clamped in a vise, this tool cuts threads on wire spokes or rods up to $\frac{5}{32}$ inch in diameter by simply turning a handle. Collet holds $\frac{3}{8}$ or $\frac{1}{16}$ inch diameter dies. Specify which size wanted.

No. 50. Price, each, without dies..... (YAFUB) $3.50

No. 44 Draw-Shave Guides

Or chamfer gauges as they are also known, fit on the draw-shave blade and make cornering of timbers a very easy operation. Working faces and thumb screws nickel plated.



No. 44. Price, per pair..... (YAEGY) $1.40

No. 116 Foot Power

A well made, nicely balanced wheel, 16½ inches in diameter, grooved for round belt. Finished in red and black enamel. Weight, 25 pounds.

No. 116. Price, each.....(YEAHD) $9.00

No. 35 Foot Power

Heavier than the above, with a 20-inch wheel, with a turned face 1⅜ inches wide, grooved so round belt or flat can be used. Treadle remains stationary when not worked. No dead center. Finished in red and black enamel. Weight, 64 pounds.

No. 35. Price, each.....(YACTE) $15.00

PAGE 410

No. 117 Foot Power

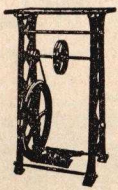
Very similar to No. 35 above, but with leather strap pull instead of chain. Heavy return spring. No dead center. Finished in red and black enamel. For round or flat belt. Weight, 64 pounds.

No. 117. Price, each.....(YEANK) $20.00

No. 122 Foot Power

A powerful double treadle machine geared 3 to 1, giving great power and speed. Wheel turned and grooved for 1½-inch flat or round belt. Finished in red and black enamel. Height, 23 inches. Weight, 81 pounds.

No. 122. Price, each.....(YEBIZ) $23.50

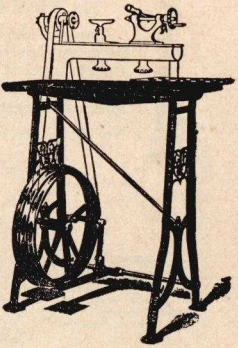


No. 120 Foot Power Table

A complete equipment in itself of foot power, countershaft, and bench, so arranged that almost any kind of small machine can be set on the bench and driven from the countershaft below. Pulleys grooved for round belt, but flat belt can be used if desired. Height, 39 inches. Top, 24 x 14 inches. Drive wheel, 20 inches in diameter. Countershaft receiving wheel, 3 inches in diameter. Countershaft driving wheel, 8¼ inches in diameter. Weight, 115 pounds.

No. 120. Price, complete, with belt shown.....(YEAXT) $28.00

No. 121 Power Bench



Designed especially for use with our No. 125 Bench Lathe, on page 375, and provided with slots for bolting lathe to the table. Strongly constructed entirely of iron and steel even to the table top. Rim around the edge prevents tools from rolling off. Tool rack at the back is provided with 11 small and 12 large holes. The smallest step of the cone pulley is 18 inches; second and third steps are proportionate to the size of the pulley on the No. 125 Bench Lathe.

The foot power runs very smoothly and easily.

Finished in red and black enamel. All steel parts are polished.

The table is 35 inches high, 31 inches long, and 14 inches wide, exclusive of the tool rack. Net weight, about 160 pounds.

No. 120. Price, each.. (YEBBO) $30.00

PAGE 411

No. 123 Polishing Machine

A useful combination of a foot power with No. 23 Polishing Head. Spindle has a taper screw on one end and a three-jawed chuck of 0 to $\frac{3}{32}$ inch capacity, and a set of flanges for holding 4 x $\frac{3}{4}$ inch wheels on the other. Height, 45 inches. Necessary belt furnished. Drive wheel, 20 inches in diameter. Table, 10 x 5 inches. Weight, 64 pounds.

No. 123. Price, each..... (YEBOB) $21.00

No. 124 Polishing Machine

This machine is identical to No. 123 above, except the head, which is our No. 24, and is heavier, having a three-jawed chuck with 0 to $\frac{1}{4}$ inch capacity.

No. 124. Price, each..... (YEBUC) $23.00

No. 118 Tool Grinder

A powerful foot power grinding machine. Foot power is geared and has double treadle. In every respect same as No. 122 Foot Power. Speed up to 3000 revolutions. The grinding head mounted on the table is No. 26½, which will take wheels up to 10 inches in diameter with ¾-inch face and ½-inch hole. Floor space required, 18½ x 12 inches. Height to top of wheel, 44 inches. Table, 10 x 9 inches. Weight, 109 pounds. Necessary belt furnished.

No. 118. Price, each..... (YEASP) $36.00

No. 79 Foot Power Drilling Machine

A sensitive high-speed drill with a No. 122 double treadle foot power with geared drive. Feed operated by raising table. Drills to center of 6½-inch circle. Fitted with all-steel chuck with 0 to ¼ inch capacity. Height, 54 inches. Height to table, 36 inches. Weight, 110 pounds.

No. 79. Price, complete, with belt..... (YAPIJ) $44.00

No. 10 Tool Set

Consists of a mahogany lacquered hard wood handle with eight numbered compartments holding five fluted awls, two small screw-drivers and a scratch awl. Tools removed through hole in rotating cap. Chuck holds tools very securely. All exposed metal parts polished and nickel plated. Length of handle, 5 inches.

PAGE 412

No. 10. Price each, complete ..... (WYJJA) $1.20

No. 13 Universal Tool Handle

Will hold very securely any small square shank tools similar to those on pages 336 and 337. Handle is mahogany finished hard wood. Metal parts polished and nickel plated. Length over all, 7¾ inches.

No. 13. Price, each..... (WYLPO) $0.80

Iron Bench Levels

These levels are the same as those on page 137, except that they have flat ground bases. The prices below are subject to the same discounts as those on page 137.

	Length		Price, Each
No. 513	6 inches, open ends	(YUAHS)	$1.60
No. 505	6 inches, closed ends	(YOYAF)	1.85
No. 506	9 inches, closed ends	(YOYGE)	2.20
No. 507	12 inches, closed ends	(YOYNB)	2.30
No. 509	18 inches, open ends	(YOZAG)	3.35
No. 510	24 inches, open ends	(YOZIJ)	3.85

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